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FROM THE AUTHOR.

REVISION
OF THE
CANADIAN RANUNCULACEÆ.

BY

GEORGE LAWSON, Ph.D., LL.D.,

Fellow of the Royal Society of Canada, Royal Physical and Botanical Societies of
Edinburgh, and Institute of Chemistry of Great Britain and Ireland;
Honorary Member of the Edinburgh Geological
and Scottish Arboricultural Societies, &c.

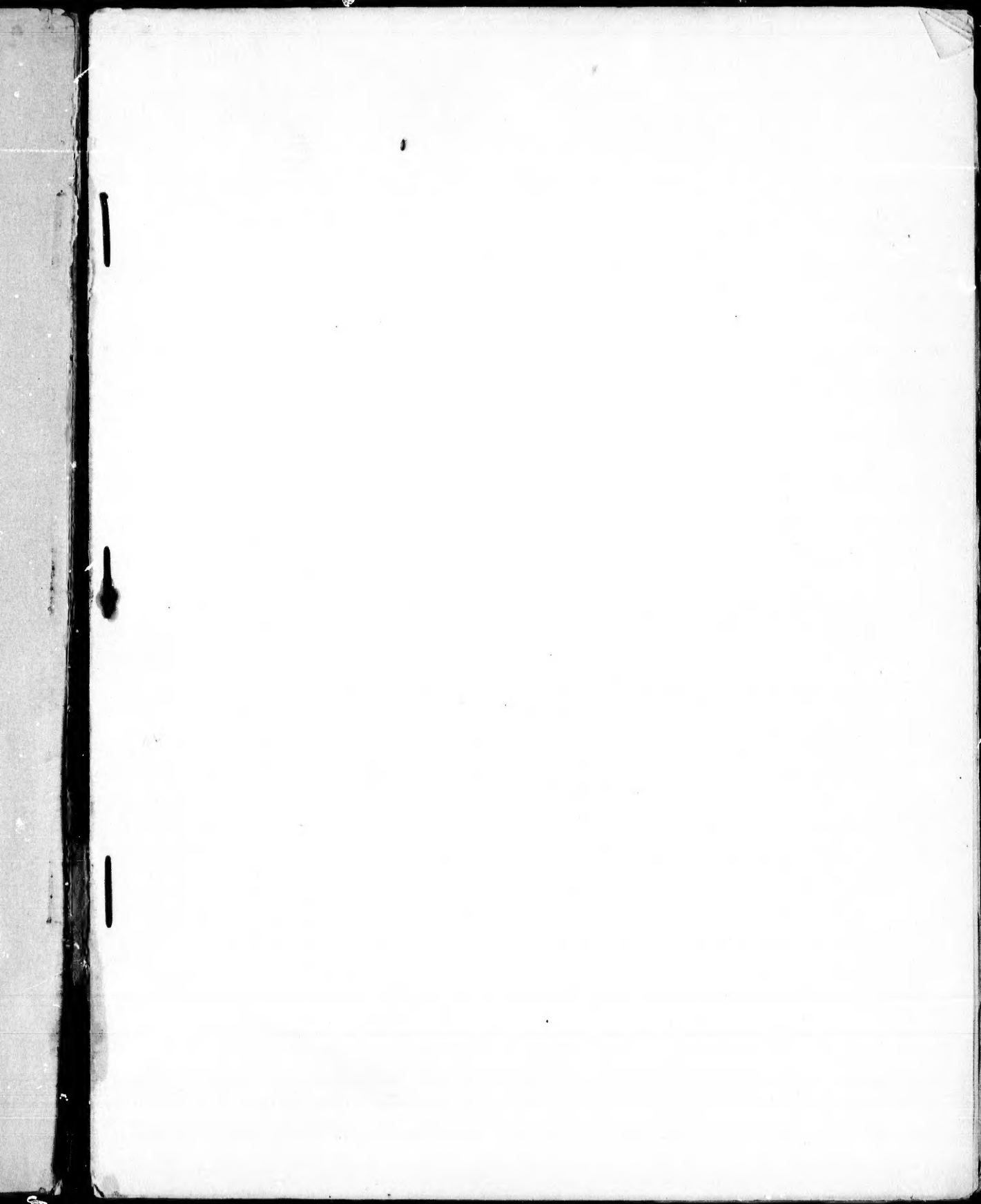
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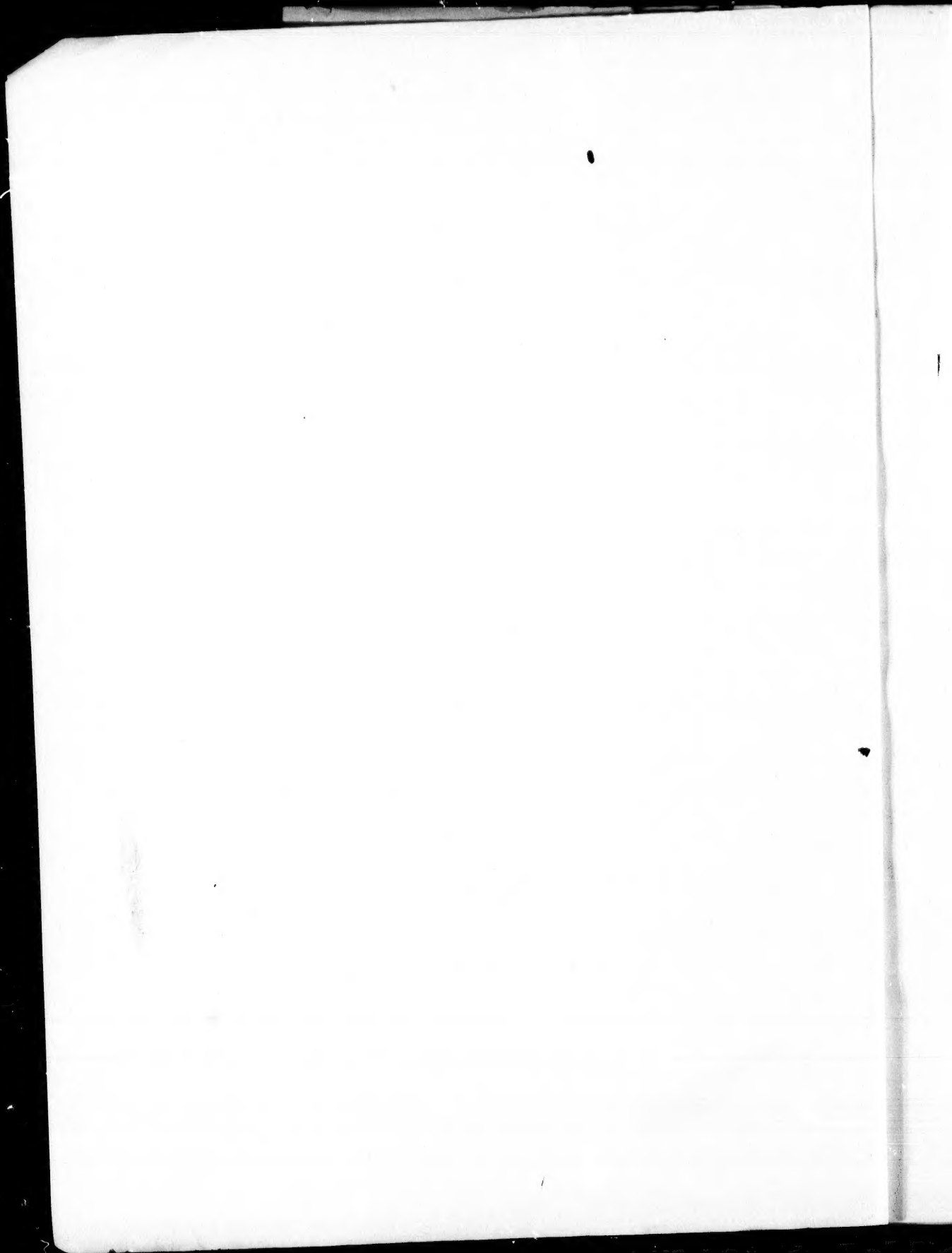
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TRANSACTIONS OF THE ROYAL SOCIETY OF CANADA,

VOL. II, SECTION IV, 1884.

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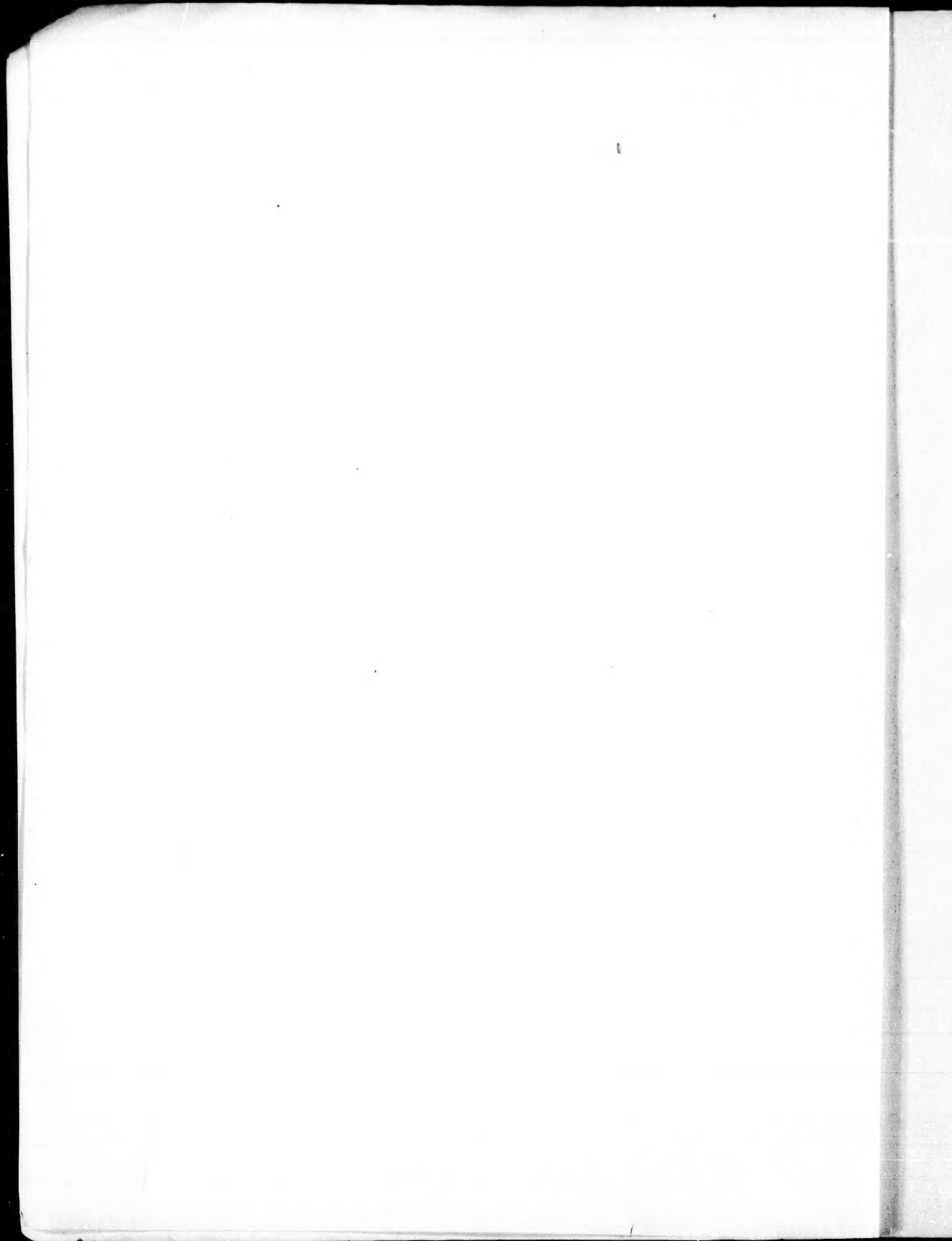
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III.—*Revision of the Canadian Ranunculaceae.*

By GEORGE LAWSON, Ph. D., LL.D., Dalhousie College, Halifax, Nova Scotia.

(Read May 23, 1884.)

In the year 1870, my monograph of the "Ranunculaceae of the Dominion of Canada" was published in the Transactions of the Nova Scotian Institute of Natural Science. Its objects were: to show what species of Ranunculaceous plants had been identified as Canadian; to correct their nomenclature, as far as this could be done with the limited material to which access could then be had; to present concise descriptions of the species; to point out their geographical range as then ascertained; to place on record their local occurrence so far as had been observed; and, finally, to suggest points for investigation in regard to those species that appeared to be of doubtful rank, whose relations to others were imperfectly understood, or whose occurrence and distribution were imperfectly known. After a lapse of thirteen years, during which period a good deal of botanizing has been done in Canada, and many useful publications bearing upon the North American flora have appeared,—some within our own borders, others in the United States of America, in England, and in Russia,—I have thought it might be useful to return to this Order, and present to Canadian botanists, through the Royal Society, a fuller and more accurate description of our Ranunculaceous plants than was possible at the time when my previous paper was prepared. Throughout the Dominion many collectors have been at work. In the older provinces, resident amateur botanists and students have, by individual effort and through "field clubs" and similar organizations, already done much good service to science, both in collecting materials and working up the botany of their respective districts. By the rapid opening up of the great Northwest, by the survey explorations over the Plains, among the Rocky Mountains, the Cascades, in British Columbia, and along the Pacific coast, our knowledge of the distribution of our indigenous plants has been greatly extended. The names of those to whom I am indebted for specimens, seeds, or information, used in the present paper, will be found under the several species, but foremost among recent collectors may be mentioned the name of Professor Macoun, who, with other officers of the Canadian Survey, has had opportunities such as fall to the lot of few botanists, and, availing himself of them to the fullest extent, he has reaped an abundant harvest, as is shown by the lists already published and by the accumulations of material still awaiting examination. I have to express my obligations to Dr. Selwyn, the director of the Survey, for affording me every facility for examining the herbaria in the museum.

It is hoped, by arranging the materials of our Canadian collectors and observers, and collocating the results obtained by botanists in other countries, in occasional monographs

such as the present, that the information thus brought together may be made available for general use, and prove an incentive to resident botanists and students to continue and extend their labours, and direct their energies to the observation and record of facts bearing upon questions that still need elucidation.

It is very desirable that collectors should be particularly careful to note the precise localities and dates of collection of their specimens. Where names of places are apt to be mistaken, the latitude and longitude should be noted as nearly as possible. Such facts form useful scientific data. The tendency has been, in our large country, especially in published floras and lists, to omit special localities, and to indicate the general geographical range, or supposed range, of the plants over wide areas, in such vague terms as, "from Canada to the Pacific," "from the Atlantic through the wooded country to the Rocky Mountains and British Columbia," "Newfoundland, Labrador and Hudson Bay," etc. In working out the distribution of plants, it is not safe to tabulate as facts such statements as these, because there may be reasonable suspicion either that, in difficult families, more than one species is included in the range indicated, or that the statement may be the result of a mental impression rather than of a sufficient number of actual observations. When we have the specimens from definite localities before us, they can be compared and identified, and the range of the plants may thus be ascertained with definiteness on actual data. Our aim should be to collect materials for a Canadian flora, bearing in mind that, whilst a paucity of facts was some excuse in the early days for vagueness of generalization, now, the more material we accumulate, the greater opportunity there is for precision in our work. The many imperfections of this paper will indicate how much room remains for work in the field, in the herbarium, and in the library. Its special objects are:—

1. To show what species of *Ranunculaceae* have been ascertained to be certainly inhabitants of the Dominion of Canada, and of adjoining tracts of country that, for purposes of geographical botany, cannot well be disconnected,—citations being given of the historical evidence for their occurrence in cases of plants not observed during recent years.
2. To correct the nomenclature so as to bring it in accord, as far as possible, with that adopted by the most recent and trustworthy authorities in the standard works of other countries.
3. To present concise descriptions of the several species, so as to enable students to identify them with certainty.
4. To give the synonyms and references necessary for tracing the history of the several plants throughout botanical literature back to the first scientific recognition of the species, wherever this can be done without over-burdening the record. In a few cases, pre-Linnean citations are given where they tend to elucidate or illustrate the early history or distribution of a species, or the origin of its specific name.
5. To point out the geographical range of these plants over Canada, and other parts of the Northern Hemisphere.
6. To record their local distribution, that is their presence or absence from particular localities, or occurrence or absence throughout larger districts of the several provinces.
7. To suggest points for observation in regard to those species that appear to be of

doubtful rank, or whose relations to other reputed species are still imperfectly understood, or whose range has not been fully traced.

The *Ranunculaceæ*¹ form a large natural order of flowering plants, distributed chiefly throughout the temperate and cooler parts of the northern hemisphere. They belong to the polypetalous division of Dicotyledones, and form the first order of Bentham and Hooker's "Genera Plantarum," as of most other modern systematic works. In Jussieu's "Genera Plantarum," they formed the first order of "Class 13, Polypetalous Dicotyledonous plants, with hypogynous stamens." Upwards of 1,200 species have been described by authors as inhabiting the globe, only a small proportion being Australian, but Hooker and Bentham reduce the number of well-distinguished species to 540. Lindley had estimated them at 1,000.

Whilst, in regard to structure, the boundaries of the order are pretty well defined, and the plants which it contains present a certain uniformity in the form, modes of division and incision of the leaves, which, in a large majority of the herbaceous species are more or less tripartitely or palmately divided, and always without stipules, although often with flattened petioles, yet the several genera present considerable diversity of modification in the form, number, and arrangement of the parts of the flower. In the genus *Clematis*, the calyx consists of large petaloid sepals, whilst the petals are mostly absent. In *Anemone* we have the same modifications, with this difference, that the sepals are imbricate in æstivation, that is, overlapping, and not valve or meeting at the edges on the same plane. In *Thalictrum*, the sepals are small and imperfectly petaloid, the stamens in some of the species forming the conspicuous part of the flower. In *Ranunculus*, the calyx consists of five green imbricate sepals, assuming the more usual general form, texture and colour of this organ as seen in other families of plants, whilst, in this genus, the corolla also assumes its more normal form as a verticil of large, flat or cupped, bright-coloured petals. *Myosurus* presents us with other modifications; the sepals are spurred, the petals are saccate and stalked, and the receptacle is greatly elongated. *Caltha* has large petaloid sepals, but no petals. In *Trollius*, the sepals are also large and conspicuous, variable in number, but there are slender petals with a pit at base. In *Coptis* the petals are shortly tubular at the apex. In *Aquilegia* they are funnel-shaped, being narrowed posteriorly into long hollow "spurs." Then there are two genera in which the flower is irregular, viz., *Delphinium* and *Aconitum*. In these, as well as in some others, the petals are peculiar, small, deformed, or altogether absent. The fruit also varies considerably in this order. In most cases it consists of a large number of minute nut-like achenes (each containing a single seed); but in *Paeonia*, *Caltha*, *Trollius*, *Coptis*, *Aquilegia*, *Delphinium*, *Aconitum*, the fruit consists of several or many-seeded "follicles" or pods. In *Actea*, etc., it is a berry.

Many of these plants have powerful physiological actions, owing to organic compounds which they contain; several have been long in use in medicine, and as

¹ *Ranunculaceæ*. A. Laurent Jussieu, *Genera Plantarum* (1789); A. P. De Candolle, *Reg. Veg. Syst. Nat.* (1818); Lindley, *Veg. Kingdom* (1853); Endlicher; A. Gray; Bentham & J. D. Hooker (1862).

poisons. In some, the acid or poisonous principle is so volatile as to be removable by drying or boiling. *Aconitum Napellus*, which yields the powerful alkaloid Aconitine, was used by the Romans as a poison, and has of late years been the cause of fatal accidents in England, where the root had been mistaken for horse-radish. *A. ferox* was at one time used by the natives in India to poison wells in advance of the British troops. *Ranunculus acris*, *Flammula* and *sceleratus* have been employed in Europe for blistering, instead of centharides. *Anemone Hepatica*, and *Delphinium* are astringents; *Helleborus*, a drastic purgative; *Hydrastis Canadensis*, a tonic; *Coptis trifolia*, a powerful bitter; *Xanthorhiza apiifolia*, a tonic bitter. The berries of *Actæa* are poisonous, the roots anti-spasmodic, expectorant, astringent,—used in cases of catarrh. *Cimicifuga* has similar properties, and its preparations have of late years come into use in rheumatic affections; its astringent bitter root is a reputed remedy for rattle-snake bites. Few of these plants can be used as food or fodder. *Ranunculus repens* is eaten by cattle. The small starchy tubers of *R. Ficaria* have been cooked as an article of food in Austria; *Caltha palustris* is used in New England in spring as a pot-herb, and *C. leptosepala* is boiled and used as greens by the silver miners on the Rocky Mountains of the South.¹

CONSPECTUS OF GENERA.

TRIBE I. **CLEMATISÆ.** Sepals valvate. Petals 0, or narrow staminal processes. Carpels numerous, one-ovuled. Ovule pendulous, raphe dorsal. Achenia indehiscent. Stem herbaceous, or usually woody and climbing. Leaves opposite.

Genus 1. CLEMATIS.

TRIBE II. **ANEMONEÆ.** Sepals imbricate. Carpels one-ovuled. Ovule pendulous, raphe dorsal. Achenia indehiscent. Herbs. Leaves radical, alternate or involucre.

* *Petals 0 or very small, not hollowed.*

Genus 2. THALICTRUM. Involucre 0. Sepals 4-5.

Genus 3. ANEMONE. Involucre formed of a verticil of floral leaves, rarely 0. Sepals several or numerous, petaloid.

** *Petals hollowed out or tubular.*

Genus 4. MYOSURUS. Sepals spurred at the base. Petals slender. Achenia spicate (on an elongated receptacle).

TRIBE III. **RANUNCULEÆ.** Sepals imbricate. Carpels one-ovuled. Ovule ascending, raphe ventral. Achenia indehiscent. Herbs. Leaves radical or alternate.

Genus 5. TRAUTVETERIA. Petals 0.

Genus 6. RANUNCULUS. Sepals caducous. Petals usually 5 or more.

TRIBE IV. **HELLEBOREÆ.** Sepals imbricate. Petals small, or abnormal in form, or 0. Carpels many-ovuled, dehiscing when ripe, or rarely baccate. Herbs. Leaves radical or alternate, the involucre ones similar.

Subtribe 1. CALTHÆ. Leaves palmately-nerved or palmatisect. Flowers regular, solitary, or in panicles.

* *Petals 6.*

Genus 7. CALTHA. Ovules in a double series along the ventral suture.

Genus 8. HYDRAETIS. Ovules 2. Carpels baccate.

** *Petals small or slender.*

Genus 9. TROLLIUS. Sepals usually deciduous. Petals entire.

Subtribe 2. ISOPYREÆ. Leaves ternate, sub-pinnate, or compound. Flowers regular, solitary, or in panicles.

¹ For elaborate details in regard to some of the active principles of Ranunculaceous plants, particularly Anemonin, Anemonin, and Anemonin Acids, see Lloyds' *Drugs and Medicines of N. America*, vol. i., No. 3, October, 1884.

* *Sepals 5-6.*

Genus 10. COPTIS. Petals small. Carpels free, stipitate.

Genus 11. AQUILEGIA. Petals prolonged backwards into long hollow spurs.

Subtribe 3. DELPHINEÆ. Leaves palmately-nerved or palmatisect. Flowers irregular.

Genus 12. DELPHINIUM. Dorsal sepal spurred behind.

Genus 13. ACONITUM. Dorsal sepal helmet-shaped.

Subtribe 4. CIMICIFUGÆ. Leaves ternate, sub-pinnate, or decomposed. Flowers regular, in racemes.

* *Stamens numerous.*

Genus 14. ACTÆA. Carpel 1, baccate.

Genus 15. CIMICIFUGA. Carpels 1 or several, dehiscent follicles.

Tribe V. **PEONIEÆ.** Sepals imbricate. Petals large. Carpels with a circular disc, several or many ovuled, dehiscent. Large herbs or slightly woody. Leaves radical or alternate, pinnately decomposed.

Genus 16. PEONIA.

Genus I.—CLEMATIS, *Linnaeus*.Bentham and Hooker, *Genera Plantarum*, I, p. 3.

List of Species :—

1. *C. verticillaris*.2. *C. Virginiana*.3. *C. ligusticifolia*.4. *C. Douglasii*.[*C. alpina*, var. *Ochotensis*.]1.—CLEMATIS VERTICILLARIS, *De Candolle*.

Stem shrubby, slender, trailing or climbing, from ten to twenty feet or more in length. Leaves of the barren or leaf-bearing shoots opposite, petioles twisted and clasping as tendrils, each leaf consisting of three stalked leaflets, which are ovate, or slightly heart-shaped, or oblong-lanceolate, shortly acuminate or acute, entire or more usually coarsely and laciniately toothed or trifid, hairy when young, becoming nearly glabrous at maturity. Peduncles opposite, each bearing one large cernuous flower. Sepals four in number, one and a half to two inches in length, petaloid, ovate-lanceolate, acuminate, of a pleasing but not bright purple colour, thin and flaccid, somewhat cupped and convergent, forming a campanulate blossom, not expanding freely. Petals small, crowded, in form of spatulate stamen-like processes, the inner series passing into stamens. The flowers, which are from two to three inches in diameter, are produced in May, or early in June, on the bare leafless shoots of the previous year, arising in pairs from the opposite buds of the shoot. Each flower is accompanied by an apparent leafy verticil, formed of two pairs of long-stalked trifoliate leaves, produced simultaneously with the development of the flower. The flower arises from the axil of one of the upper pair of subtending leaves, and from the other a leaf-shoot or branch shoots forth. The flowers are succeeded by large heads of achenes with long silky plumose tails. The leaflets are long-stalked and vary in form (as usual in this genus) from broadly ovate to ovate-lanceolate, usually more or less cordate at base, acute or acuminate, somewhat lobed, coarsely toothed or entire, at least towards the point, one and a half to two inches in length, and somewhat less in breadth. Fl. May-June.

Clematis verticillaris. De Candolle, Syst. Nat. Reg. Veg., Vol. I., p. 166. (1818.) Prodr. dromus, I., p. 10. Hooker, Fl. Bor.-Am., I., p. 2. Torrey & Gray, Fl. N. Am., I., p. 10. MacLagan, Trans. Bot. Soc. Edin., III., p. 13. Lond. Jour. Bot., VI., p. 66. Torrey, Fl. N. Y., I., p. 7. Wood, Botany, p. 201. Gray, Manual, ed. 5, p. 35. Provaucher, Fl. Can., p. 4. Lawson, Ranunc. Can., p. 20. Bot. Wilkes, p. 212. Watson, King's Rep., V., p. 4. Porter, Hayd. Rep., 1871, p. 477. Coulter, same, 1872, p. 758. Watson, Bibl. Index, I., p. 11. Macoun, Cat. (1883), No. 1. J. F. James, Revis. Clematis, pp. 3, 11, and 19. Brewer & Watson, Botany of California, ed. 2, Vol. I., p. 3.

Atragene Americana. Sims, Bot. Mag., t. 887. Aiton f., Hortus Kewensis, ed. 2, III., p. 342, (1811). Pursh, Fl., p. 384. Spreng., Syst., II., p. 644. Watson, Dend. Brit., p. 74, (1825). Don, Mill. Dict., I., p. 10. Spach, Hist. Veg., VI., p. 270. Dietr. Syn., III., p. 349. Loudon, Arboret., I., p. 248, t. 27. Hort. Brit., p. 228. Gray, Gen. Illus., p. 14, t. 1. Manual, 2 ed., p. 3. Revue Horticole, 1854, t. 7, and 1855, t. 17. Curtis, Bot. N. Carolina, p. 120. Chapman, Fl. South. U. S., p. 3.

C. Americana. Poir., Suppl., V., p. 622. (1810-16.)

A. Columbianna. Nuttall, Jour. Ac. Phil., VII., p. 7.

C. Columbianna. Torr. & Gr., Fl. N. Am., I., p. 11. (Watson.)

The species was originally described in the *Botanical Magazine* as *Atragene Americana*, De Candolle, in "Regni Vegetabilis Systema Naturale," did not adopt the genus *Atragene*, but merged it in *Clematis*, as Poir., had previously done. Poir., called it *C. Americana*. But there being already a *Clematis Americana*, described in Miller's Dictionary, from Equatorial America, and adopted by De Candolle, the latter botanist had to find a new specific name for the Northern American plant, now transferred to *Clematis*, and accordingly called it *C. verticillaris*, in allusion to the apparent verticils of leaves subtending the flowers. In the *Hortus Britannicus*, its English name is given as the Whorled American *Atragene*.

So far as observed, the limits of the range of this species are as follows:

Pacific Coast Region.—South limit (Northern California).....	40° N. Lat.
North limit (British Columbia).....	50° "
(Extent of range, N. to S.=10°.)	
Rocky Mountain Region.—South limit.....	40° "
North limit (Mount Selwyn).....	56° "
(Extent of range N. to S.=16°.)	
Elevation limits: Teton, 48° N.=11,000 ft.	
Utah, 40° N.= 9,000 "	
Central Continental Region.—South limit (Wisconsin).....	46° "
North limit (Hudson Bay).....	54° "
(Extent of range, N. to S.=9°.)	
Atlantic Coast Region.—South limit (Carolina Mountains)	37° "
North limit (Maine, Vermont, Montreal).....	45° "
(Extent of range, N. to S.=8°.)	
Extreme South Limit (Carolina Mountains).....	37° "
Extreme North Limit (Rocky Mountains).....	56° "

In woods in the central districts, as far north as lat. 54°, ascending the elevated valleys on the eastern declivity of the Rocky Mountains in that latitude.—*Richardson, T. Drummond*. At Cape Mendocino, on the N.W. coast, in lat. 40°, plentiful (North California).—

Douglas. (Hook., Fl. Bor.-Am., I., p. 2.) Montreal and Belœil Mountains, Que.; at Jones's Falls (Rideau Canal) this was the most striking plant, a handsome-flowered species ascending the trees and rocks to a height of twenty or thirty feet, (1843).—*Dr. P. W. Macdagan*. Vicinity of Quebec City.—*Dr. Brunet*. Mountain side east from Hamilton, Ont.—*Judge Logie*. North limit in Hudson Bay Territories, lat. 54°; seldom occurs to N. W. of Ontario.—*Barnston*. Mount Selwyn, lat. 56°, Rocky Mountains; Coast Range of British Columbia; foot-hills of Rocky Mountains, near 49th parallel; and in the Bow River Pass.—*Macoun*. North Hastings, Ont., 15th June, 1874, in fruit.—*Macoun*. Spence's Bridge, British Columbia, 21st May, 1875.—*Macoun*. Chelsea Mountains, north from the city of Ottawa; first found there by the *Ottawa Field Club*. (In flower May, 1884.)

Vermont.—*Wood*. New York and Pennsylvania.—*Pursh*. Mountains of North Carolina.—*Chapman*. Delaware, New Jersey, Connecticut, Maine, New Hampshire, Wisconsin, Montana, Idaho, Utah.—*James*.

According to *Hortus Kewensis*, the American *Atragene* was introduced to English gardens by Messrs. Loddiges, in the year 1797. It is the earliest flowering species, but, as the flowers are produced before the foliage, it is less adapted than some others for garden decoration. In its native haunts, in the rocky and bushy woods, it is an agreeable surprise to the botanist to find its charming blossoms among the withered leaves in the early season of spring flowers.

2.—*CLEMATIS VIRGINIANA*, *Linnaeus*.

Stem shrubby, climbing. Leaves opposite, petioles twisted and clasping as tendrils, leaflets three, stalked, ovate or somewhat cordate, acute, lobed, and coarsely toothed. Peduncles opposite, each bearing a large panicle or cluster of numerous flowers. Sepals four, rather large, petaloid. Petals absent. A climber, ten or twelve feet high, clinging to bushes and small trees for support. Flowers white, fragrant. The plant is very conspicuous in the fall season, as the leafless stems with their numerous clusters of plume-tailed achenes form large feathery wreaths. The leaflets are always prominently toothed, sometimes almost lobed, never entire, as they sometimes are in *C. Vitalba*, of Europe, and constantly in several Indian species. Very variable in length and breadth and division of leaflets.

Clematis Virginiana. *Linnaeus*, in *Amœn. Acad.*, IV., p. 275. *Sp. Pl.*, 766. *Michaux*, Fl. Bor.-Am., I., p. 318. *Pursh*, II., p. 384. *Bigelow*, Fl. Bost., p. 133. *Lam. Dict.*, II., p. 43. *Walt.* Fl. Car., p. 157. *Aiton* f., Hort., Kew., ed. 2, III., p. 344. *Willdenow*, *Sp. Pl.*, II., p. 1290. *Persoon*, *Synops.*, II., p. 99. *DC. Syst.*, I., p. 142. *Prod.*, I., p. 4. *James*, Long's Exp., II., p. 343. *Elliott*, II., p. 44. *Wats.* Dendr., 74. *Hook.*, Fl. Bor.-Am., I., p. 1 (in part.) *London Jour. Bot.*, VI., p. 66. *Don.* Mill. Dic., I., p. 5. *Torr. and Gr.*, Fl. N.A., I., p. 8 and p. 657. *Spach*, Hist. Veg., VII., p. 278. *Dietr. Syn.*, III., p. 345. *Torr.* Fl. N.Y., I., p. 6. *Fremont's Rep.*, p. 87. *Emory's Rep.*, p. 136 and p. 406. *Loud.* Hort. Brit., p. 228. *Arbor.*, I., p. 237, fig. 13. *Richardson*, Arct. Exped., II., p. 442. *Gray*, Pac. R. Rep. 12, 40. *Manual.* *Curtis*, Bot. N. Car., p. 120. *Parry*, Pl. Minn., p. 608. *Lesquer*, Fl. Ark., p. 374. *Lawson*, Mill. Fl. N.S., ser. 3, part 5, t. 14. *Chapman*, Fl. So. U.S., p. 4. *Lawson*, Ranunc. Can., p. 20. *Watson*, Bibl. Index, p. 11. *Macoun*, Cat., 1883, No. 2.

- C. Canadensis*. Mill., Dict., n. 5.
C. fragrans. Salisb. Prod. p. 371, not of Tennenore (which is *Flammula*).
C. cordifolia. Moench, Sup., p. 104.
C. bracteata. Moench, Sup., p. 103.
C. cordata. Pursh, II., p. 384. "DC. Prod., I., p. 4, exc. syn." Spreng. Syst., II., p. 670. Don, Mill., I., p. 5.
C. Purshii. Dietr. Syn., III., p. 345.
Clematis Virginiana pannonicæ similis. Plukenett, Mantissa, p. 51, t. 379, f. 4, (1700.)
C. holosericea. Pursh, Fl., II., p. 384. Chapman, Fl. S. U. S., p. 4. Referred here by Mr. James.

Canada.—*Michaux*. Banks of streams and moist spots, edges of swamps, ravines, etc., from the shores of Bras d' Or Lake, Cape Breton, and the Atlantic coast of Nova Scotia, westward through the provinces of New Brunswick, Quebec, and Ontario. Banks along the roadside at the Rifle Range, Bedford, N.S.—*Lawson*. London, Ont.—*Millman*, 13th August, 1879, Herb. Can. Survey. In the townships in rear of Kingston, in Frontenac and adjoining counties, as between Kingston and Odessa, Waterloo, and Hinchinbrook; also Toronto.—*Lawson*. Windsor, N. S.—*Prof. How*. Nicolet and St. Johns, Q., and Niagara, Ont.; also Montreal, 12th Aug., 1851.—*MacLagan*. Two miles from Prescott, near Ottawa and Prescott Railway, abundant; rare in thickets northward to Chelsea.—*Mr. B. Billings jr.* Belleville, abundant in low grounds, along small streams; also Thunder Bay, Lake Superior.—*Macoun*. Red Lake River, September, 1860.—*Dr. Schultz*. Provancher cites Pied du Cap Tourmente and Isle Verte, which is the last outpost north-eastwardly.

Mr. Barnston observes that westwardly this species does not appear to pass the longitude of Red River or Lake Winnipeg, and is rare to the N.W. of Ontario Province. South end of Lake Winnipeg.—*Drummond*. Canada to Georgia, and west to the Mississippi.—*T. and G.* Said by Sir John Richardson to be common to Oregon, the eastern United States and Canada, and to extend northwards to the Saskatchewan; but Sir John no doubt included the form *ligusticifolia*, which, although described from Nuttall's Notes in Torrey and Gray's Flora, was not then well known or generally recognized as a species.

Hooker observed that this had been long cultivated in England, where it proved a hardy plant, well adapted for covering walls and arbours. Its flowers are highly fragrant, which is not usual in this genus. The first notice of its cultivation in England is in Hortus Kewensis, "1767, by Mr. James Gordon."

3.—CLEMATIS LIGUSTICIFOLIA, Nuttall.

Stem shrubby, trailing or climbing. Leaves pinnate and five-leaved, or ternate, occasionally seven-leaved; the leaflets oval, oblong or lanceolate, from broad to very narrow, tri-lobed or with few distant teeth. Inflorescence in close paniced corymbs, flowers on long, slender pedicels, diœcious. Otherwise as *C. Virginiana*. In Professor Macoun's specimens from source of the Qu'Appelle the leaves are pinnate, the leaflets short, as broad as long, and shortly stalked, inflorescence corymbose. In a form (apparently of this) collected in May, 1883, near Canyon City, Colorado, the leaflets are narrowly oblong-lanceolate, very acuminate, with a few distant teeth.

C. ligusticifolia. Nuttall in Torr. & Gr., Fl., I., p. 9. Gray, Pl. Fendl., p. 3. Watson,

Bibl. Index, I., p. 10. King's Exp., 40th Parallel, p. 3. J. F. James, Revis. Clem., p. 9 and p. 15. Macoun, Cat., No. 3. Brewer & Watson, Bot. Calif., ed. 2, Vol. I., p. 3.

C. Virginiana. Hook., Fl.-Bor. Am., I., p. 1, in part. Richardson, Boat Voy. App., II., p. 284, in part. Lawson, Ranunc. Canad., p. 20, in part.

From Washington Territory to the Saskatchewan.—*Watson*, King's Exp. 40th parallel, p. 3. Rocky Mountains. The locality given in Hook., Fl. Bor.-Am. for *C. Virginiana*, viz., Banks of the Columbia (*Douglas*), no doubt belongs to *C. ligusticifolia*. Climbing or trailing over bushes or sand on the sand hills at the source of the Qu'Appelle; Spence's Bridge and Cache Creek, B.C.—*Macoun*. Sand Creek, Columbia Valley, B.C., 22nd July, 1883; Coldstream River, Cascade Mountains, B.C., 8th July, 1877; margin of Waterton Lake, Rocky Mountains.—*Dr. G. M. Dawson*.

This is essentially a Rocky Mountain plant, occurring in one or other of its forms in New Mexico, Colorado (where I gathered it last year, near Canyon City), California, Arizona and Oregon. The forms which pass under the name of *C. ligusticifolia* might be referred as varieties of *C. Virginiana*. Mr. James suggests that the eastern plant (*C. Virginiana*) is a descendant of the western one (*C. ligusticifolia*), and that the latter may have its nearest relatives in the highlands of India, but I know no Indian species resembling it.

Dr. George Dawson's specimen from Sand Creek, Columbia Valley, with nearly smooth, broadly ovate, subcordate, tri-lobed leaflets, may be T. and G.'s var. *β. brevifolia*.

4.—CLEMATIS DOUGLASII, Hooker.

Stem erect, simple, herbaceous, and, like the peduncle, strongly striate, with one terminal campanulate cernuous flower. Leaves pilose, bi-tri-pinnatifid, the segments linear. Carpels villous, with long plumose tails.—*Hooker*. Torr. & Gray.

Clematis Douglasii. Hook., Fl. Bor.-Am., I., p. 1, tab. 1. Torr. & Gr., Fl. I., p. 8 and p. 657. Lond. Jour. Bot., VI., p. 65. Don, Mill., I., p. 8. Walp., I., p. 7. Dietr. Syn., III., p. 348. Gray, Am. Jour. Sc., ser. 2, XXXIII., p. 408. Proc. Acad. Phil., 1863, p. 56. Watson, King's Rep., V., p. 3. Porter, Hayd. Rep., 1871, p. 477. Fl. Col., p. 1. Coulter. Hayd. Rep., 1872, p. 758. Torrey, Bot. Wilkes, p. 211. Watson, Bibl. Index, I., p. 10. J. F. James, Revis. Clem., pp. 3 and 12. Macoun, Cat., 1883, No. 4.

C. Wyethii. Nutt. in Jour. Acad. Phil., VII., p. 6. Torr. & Gr., Fl., I., p. 8. Walpers, Rep., I., p. 7. (Watson.)

On the west side of the Rocky Mountains, near the sources of the Columbia. *Douglas*, in Hook., Fl., B.-A., (quoted as the Oregon in Torr. and Gr.) Judging from the course of the Columbia River and Douglas's route as laid down in Hooker's map, the locality of this plant would be in the neighbourhood of Mount Brown, near 52° north latitude. It does not appear to have been found in British America by any other collector; but several localities are given for the Rocky Mountains of the south. Mr. James thus sketches its distribution:—"A mountain western species, strictly confined, so far as known, to the Rocky Mountain ranges, and extending from Central Colorado, at Middle Park, Clear Creek Canyon (middle elevations), and in the Wahsatch and Uinta Mountains of Utah, at 6,000 or 7,000 feet, to Fort Ellis, and the Yellowstone in Montana, at Snake River Valley. Teton Mountains (11,000 feet) and Flat Head River Valley in Northern

Idaho and Washington Territory." "We have specimens in fruit from Douglas's last Oregon collection." Torr. and Gray, Fl. I., p. 657.

Sir William Hooker, in describing this plant, observes: "This beautiful species of *Clematis* is quite unlike any hitherto described; and I am anxious it should bear the name of its zealous and meritorious discoverer." David Douglas, who was a native of Perthshire, Scotland, greatly distinguished himself as botanical collector for the Horticultural Society of London, in the early days when that flourishing institution was filling the gardens of England with new and strange plants. But this species does not seem to have ever reached a garden. Douglas met his death in 1834, at the early age of 36 years, by falling into a pit made by the natives of the Sandwich Islands for catching wild animals. (There is a biographical sketch in Loudon's *Gardeners' Magazine*, for May, 1835, and in *Canadian Naturalist*, 1860.)

[*C. ALPINA*, var. *OCHOTENSIS*. Leaves biternately divided, segments oblong-lanceolate, acuminate, serrate, petals few, linear. (*Atragene Ochotensis*. Pallas, Fl. Ross., II., p. 69. *C. Ochotensis*, Poir. DC. Syst. Nat., I., 166.) Prof. Gray expresses surprise that this plant should have been for the first time detected in the New World at a point so far south as Santa Fé. (*Plantæ Fendlerianæ Novi-Mexicanæ*, p. 4.) In the Old World it is the northern or Siberian form of the European *C. alpina*, but in America it has only, so far, been found in Colorado, Utah and Idaho, according to Mr. J. F. James (*Clematis*, p. 12), who observes: "Doubtless it is to be found in British America at the north, and may even extend up to Alaska." As yet, however, it cannot be included in our Flora, but will, it is hoped, ere long reward the efforts of some climber on our Rocky Mountains. It is the only species of *Clematis* common to both America and Europe.]

Genus II.—THALICTRUM, *Linnaeus*.

Hooker and Bentham, *Genera Plantarum*, I., p. 4.

List of species:—

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| 1. <i>T. Cornuti</i> . | 5. <i>T. sparsiflorum</i> . |
| 2. <i>T. occidentale</i> . | 6. <i>T. anemonoides</i> . |
| 3. <i>T. dioicum</i> . | [<i>T. purpurascens</i> .] |
| 4. <i>T. alpinum</i> . | |

1.—THALICTRUM CORNUTI, *Linnaeus*.

Root fibrous. Stem strong and tall, prominently furrowed, (three to six feet high). Radical leaves long-stalked, very large, and, like the sessile cauline leaves, ternately decomposed; leaflets large, thick and glaucous or downy beneath, varying from broadly obovate to narrowly elliptical in outline, ternately divided into rather large acute lobes. Flowers numerous, in large showy terminal panicles, diœcious or polygamous; sepals white; anthers crowded, erect, on short, stoutish filaments; stigmas very long, flattened. Carpels numerous, terete, ribbed. Cornute's *Thalictrum*.

Thalictrum Cornuti. Linn., Sp. Pl., I., p. 768, (1753). Aiton f., Hort. Kew., ed. 2, III.,

p. 347. Pursh., p. 388. Persoon, Synops. Pl., II., p. 100. Hook., Fl. Bor.-Am., I., p. 3, tab. 2 Torr. & Gray, Fl. N. A., I., p. 38, in part. Gray, Pl. Fendl., p. 5. Manual, ed. 5, p. 39. Chapman, Fl. S. U. S., p. 5. Pl. Bourgeau, 254. Lawson, Ranunc. Canad., p. 31. Watson, Bibl. Index, I., p. 25. Macoun, Cat., No. 22.

T. corynellum. DC. Syst. Nat., I., p. 172. Richardson, Frankl. Jour., 12, in part, (see Hook. Fl. B. A.)

T. confertum. Mœnch. (Watson, Index.)

T. crenatum. Desf. Cat. Hort. Par., ed. 2, p. 126. (DC.)

T. discolor. Willd.

T. rugosum. Pursh., Fl., p. 388. DC. Syst. Nat., I., p. 185.

T. Carolinianum. DC. Syst. Nat., I., p. 174. (Watson.)

T. leucostemon. C. Koch and Bouché, in App. Index Semin. Hort. Berol., 1855. Walpers, Annales Botanices Syst., IV., p. 12. C. Koch and Bouché's description does not show this plant (received at the Berlin Garden from North America) to be essentially different from *T. Cornuti*. It appears to be a form with more compact congested panicles, a peculiarity that might possibly result from its being grown in the well-drained soil of the Berlin Botanic Garden.

Thalictrum Canadense. Cornute, Canad. Pl. Hist., 186, tab. 187, (1635). Provancher, Fl. Canad., p. 5.

T. Americanum. Parkinson, Theatr., 265, n. 9, (1640).

T. majus, foliis aquilegiæ, flore albo. Morison, Historia Plantarum, III., p. 325, (1680).

T. Canadense, caule purpurascente, Aquilegiæ foliis, florum staminibus albis. Tournefort, Inst. Rei Herb., p. 271, (1700).

Banks of rivers as far north as lat. 56°, in wooded districts, the whole breadth of the continent, excluding the barren grounds and alpine tracts.—*Hooker*, Fl. B. A.

Wet meadows and margins of streams, not uncommon throughout the provinces of Ontario, Quebec, Nova Scotia, New Brunswick. Kingston, Ont., Hardwood Creek, 10th July, 1861, and surrounding country, abundant; Halifax County, not rare.—*Lawson*. Frequent in Quebec province.—*Mr. Barnston*. Chippewa and Malden, Ont.—*Dr. P. W. MacLagan*. Gaspé, moist places along the Dartmouth River.—*Dr. John Bell*. Windsor, N.S.—*Prof. How*. Prescott and Ottawa, common.—*B. Billings jr.* Lake Superior.—*Prof. R. Bell*. Belleville, common on the borders of streams.—*Macoun*. Anticosti, 1861.—*Verrill*. Newfoundland, Bonne Bay and Point Rich, July–August, 1861.—*J. Richardson*. Between Wild Rice River and Red Lake River, September, 1860.—*Dr. Schultz*. Assiniboine River, July, 1861, Nos. 40–50.—*Dr. Schultz*. From the Atlantic through the wooded districts "to the Pacific," north to Peace River.—*Macoun*. Manitoba House, 14th June, 1881, and Long Lake, N. W. Territory, 7th July, 1879.—*Macoun*, in Herb. Can. Surv. St. Marie (Beauce).—*Provancher*. Abundant in the Atlantic provinces of Canada, but its western or Pacific range has not been well traced. Cultivated in England in 1640, (Parkinson, l. c.).

2.—*THALICTRUM OCCIDENTALE*, Gray.

This is referred to by Brewer and Watson as very like the southern *T. Fendleri*, except

in the achenes, which are nearly half an inch long, narrow, long-acuminate and less curved than in that; it seems to be allied to *T. Cornuti*, the filaments not thickened upwards as in that species.

Thalictrum occidentale. Gray, Proc. Am. Acad., VIII., p. 372. Watson, Proc. Am. Acad., XI., p. 121. (1876). Brewer & Watson, Bot. Calif., ed. 2, I., p. 4.

British Columbia to W. Montana.—*Watson*. Oregon to Montana.—*Bot. Calif.*

3.—*THALICTRUM DIOICUM*, *Linnaeus*.

Root of strong thick fibres, sometimes almost tuberous. Stem twelve or fourteen inches, varying to two feet or more in height, with long-stalked ternately compound leaves, composed of rounded thin broad-lobed leaflets, green above, glaucous beneath. Flowers diœcious (or polygamous), in panicles, sepals greenish, with yellow or dull purple long slender pendent anthers. Carpels deeply furrowed, several usually abortive.

Thalictrum dioicum. Linn., Sp. Pl. p. 768. Aiton f., Hort. Kew., ed. 2, III, p. 347. Pursh, Fl., p. 388. DC. Syst. Nat., I, p. 173. Hook., Fl. Bor.-Am., I, p. 3. Torr. & Gr., Fl. I, p. 28. Hook. f., Aret. Pl., p. 283. Chapman, Fl. So. U. S., p. 5. Pl. Bourgeau, 254. Wood, Class Book and Flora, p. 204. Provancher, Fl. Can., p. 5. Gray, Manual, 5 ed., p. 39. Lawson, Ranunc. Canad., p. 32. Watson, Bibl. Index, I, p. 26. Macoun, Cat., No. 20.

T. lævigatum. Michaux, Fl., I, p. 322. (DC.) Persoon, Synops. Pl., II, p. 100.

Grassy banks of rivers; most abundant in the central limestone districts, from Canada to the banks of the Mackenzie River in lat. 67°.—*Richardson*. Found also on the eastern base of the Rocky Mountains.—*Drummond*. And on the banks of the Columbia.—*Mr. Garry*. Not found on the barren grounds, nor on naked alpine situations.—*Hook.*, Fl. Bor.-Am.

Dry woods and banks, common in central Ontario, as woods about Trenton, June, 1862, and around Gananoque Lake, Birch Island, &c., May, 1861; near Kingston Mills, and woods near Kingston Depot, 2nd May, 1860.—*Lawson*. Mountain side, Hamilton, 12th May, 1860.—*Judge Logie*. Prescott and Ottawa, common.—*B. Billings jr.* Ellis Bay, Anticosti, July 4.—*J. Richardson*. Anticosti.—*Verill*. Niagara Falls and Malden.—*Dr. P. W. Macdagan*. Belleville, abundant in rich woods.—*Macoun*. Montreal Mountain, 1848.—*James Adie*. Mackenzie River, above Fort Simpson, 22nd June, 1853; Trout Lake, June; between Severn and Trout Lake, June.—*McTurish*. Near the big lake of Harrington, Co. Argenteuil, July, 1861.—*Dr. John Bell*. Assiniboine, July, 1861.—*Dr. Schultz*, No. 71. In New Brunswick, at Keswick Ridge, rare.—*Fowler*. Flat lands, Restigouche.—*Chalmers*.

This plant was cultivated in England by Mr. Philip Miller in 1759. Mill. Dict. ed. 7, n. 9.

4.—*THALICTRUM ALPINUM*, *Linnaeus*.

Root fibrous, stem simple, smooth, three to six inches high, leaves nearly all radical, long-stalked, biternate. Flowers hermaphrodite, in a simple raceme. Carpels shortly stalked, tipped with the hooked style.

Thalictrum alpinum. Linn., Sp. Pl., p. 767. Fl. Lapponica, p. 225. Hudson, Fl. Anglica. Withering, Fl. Brit. Lightfoot, Fl. Scot., p. 286, t. 13 f. i. DC., Syst. Nat., I, p. 175. Prod., I, p. 12. Bot. Mag., t. 2237. Torr. & Gr., Fl. N. A., I, p. 39. Wood, Cl. Bk.

& Fl., p. 204. Hook. & Thoms., Fl. Indica, I., p. 18. Eng. Bot., t. 262. Hook., Bab., and other British authors. Reichenbach, Ic. Fl. Germ., III., 26. Fries, Summa Veg. Scandinav., p. 27. Lawson, Ranunc. Canad., p. 33. Watson, Bibl. Index., p. 25. Macoun, Cat., No. 23.

T. microphyllum et marginatum. Royle, Ill., Walp. Rep., I., 24-25.

T. acule. Camb., Walp. Rep., I., 12, n. 31. Ann., IV., p. 11

First recorded as Canadian on authority of Kalm; subsequently reported from the Island of Anticosti, in the Gulf of St. Lawrence, by Pursh; not noticed by Hooker in Flora Boreali-Americana. Again collected on Anticosti by Mr. Verrill, rare and not in flower, 1861; more recently by Macoun, on Jupiter River, Anticosti, very abundant in river valleys, but not on high grounds.—*Herb. Survey Canada.* Newfoundland.—*Herb. Banks, DC.* Newfoundland, 1866-8.—*H. Reeks* (Jour. Bot., IX., p. 16). Greenland.—*Hornemann.* Lyngemarken, Disco Island, west coast of Greenland, 1867.—*Brown Camp.* Plentiful at sea level amongst *Luzula spadicea*, at Englishman Bay, Disco, to the west of Lively, lat. 69° 15'.—*Hart*, Brit. Polar. Exped., 1875-6. Kotzebue Sound and Port Clarence.—*Rothrock.* Rocky Mountains of the South.—*Dr. Parry.* Iceland.—*Hooker, Lindsay, &c.* Orkney, 500 feet.—*Boswell-Syme.* Scotland, Scandinavia, &c., Wales.—*Sir J. E. Smith.* Pyrenees.—*DC.* Lapland.—*Linneus.* Himalaya and Thibet, above 10,000 feet.—*Hook. fil. & Thomson,* Fl. Ind., Walpers Annules, IV., p. 11. The stronghold of this species is in Northern Europe, where it occurs chiefly on the mountains, descending to the sea level as it approaches the Arctic Circle, and extending eastward through East Siberia. Novaya Zemlya.—*Baer and Middlff.* In Britain it extends from 53° to 61° N. lat., its southern limits being Yorkshire and Wales, on mountains, descending to the coast level in the North Highlands, and ascending to 3900 feet in the East Highlands; range of mean annual temperature 46°—34°.—*H. C. Watson,* Cybele Brit., I., p. 71, who observes: "This is truly an Arctic species, and the specific name should be construed with reference to the climate, and not as indicating any predilection for the Alps, as seems to be implied by those botanists who write the name with an initial capital,—*Alpinum.*"

5.—*THALICTRUM SPARSIFLORUM, Turczainow.*

Plant 12 to 18 inches high, with shortly petioled ternately compound leaves, which are glabrous, glaucous on the lower surface. Flowers hermaphrodite, filaments clavate. Carpels large, pale, thin and pod-like, stipitate, with embossed veins but no furrows.

Thalictrum sparsiflorum. Turcz. in Index Sem. Petropol. Ann. Sc. Nat. ser. 2, iv, p. 332. Gray, Pl. Wright. Smithsonian Contributions, V. p. 8. Watson, Bibl. Index, I., p. 26. Macoun, Cat. No. 24.

T. clavatum. Hook., Fl. Bor.-Am. I., p. 2, excl. syn. Torr & Gr., Fl. N. A., I., p. 37. Walpers, Ann. Bot., IV., p. 10. Lawson, Ranunc. Canad., p. 33.

Not *T. clavatum* of DeCandolle's Systema, Gray's Manual, and Chapman's Fl. So. U. S., which is a southern plant.

T. Richardsonii Gray, Am. Jour. Sc. XLII., p. 17.

Found only on Portage La Loche, a height of land composed of sand hills, lying in lat. 57°, and separating the waters flowing to Hudson Bay from those falling into the

Arctic Sea.—*Richardson*, in Hook., Fl. Bor.-Am. York Factory, a large number of specimens collected during successive seasons.—*Governor McTavish*. Unfortunately special localities are not given on the labels of McTavish's specimens, the district being indicated merely by the letters "Y. F." Low ground along the eastern base of the Porcupine Mountains, about lat. 53°; Manitoba; McLeod Lake, lat. 55°, B. C.—*Macoun*.

6.—*THALICTRUM ANEMONOIDES*, *Michaux*.

Root of few fleshy tubers; radical leaves few; long-stalked, ternately compound, with stalked leaflets; cauline leaves similar, forming an involucre. Plant five or six inches high, with habit and foliage of *Isopyrum*, flowers of *Anemone*, and fruit of *Thalictrum*, DC.

Thalictrum anemonoides. Michaux, Fl. B. A., I, p. 322, (1803.) DC., Syst. Nat., I, p. 186. Prodrum., I, p. 15. Hook., Fl. Bor.-Am., I, p. 4. Torr. & Gr., Fl. N. A., I, p. 39. Gray, Gen. III., I, p. 24, t. 6. Manual, ed. 5, p. 38. Chapman, Fl. S. U. S., p. 6. Watson, Bibl. Index, I, p. 25. Macoun, Cat., No. 19.

Anemone thalictroides β. Linn., Sp. Pl., p. 763.

Anemone thalictroides. Bigelow, Fl. Boston, p. 136. Pursh, Fl., II., p. 387. Aiton, Hort. Kew. Bot. Mag., t. 866. Persoon, Synops. Pl., II., p. 98. Pursh, Fl., p. 387.

Synedemon thalictroides. Hoffmannsegg, in Flora, 1832, Intell. Blatt., p. 34. Lawson, Ranunc. Can., p. 31.

Anemonella thalictroides. Spach, Hist. Veg., VII., p. 240, (1839.)

Canada.—*Kalm*, *Michaux*. St. David's, Niagara District, Ont.—*Dr. P. W. MacLagan*. Oaklands, Hamilton, Ont., 31 May, 1859.—*Judge Logie*. Vicinity of Niagara Falls and Pelee Island, Lake Erie.—*Macoun*.

[*T. PURPURASCENS*, *Linnaeus*. Attributed by Linnaeus to "Canada," in the Species Plantarum, has not so far been satisfactorily identified as a Canadian species, although reported several times. It appears to be a southern plant, well known to Dr. Gray, who gives a full description of it in the Manual, 5th edition, p. 39. *T. dioicum* is frequently tinged with purple on the upper part of the stem, leaf stalks, &c., and such forms have been mistaken in Canada for *T. purpurascens*. It is very desirable that all suspicious forms of *Thalictrum* should be collected, especially in the southern peninsula of Ontario, whence Dr. Burgess reports this species, but I have not had opportunity of examining his specimens.]

Genus III.—*ANEMONE*, *Linnaeus*.

Bentham and Hooker, Genera Plantarum, I, p. 4.

List of species:—

Section 1.—Involucre of three simple leaves close to the flower, resembling a calyx. *Hepatica*. Dillenius. Linn. DC. Gray.

1. *A. Hepatica*. | 2. *A. acutioba*.

Section 2.—Involucre much divided, distant from the flower; achenes with long plumetails. *Pulsatilla*. Tournefort. DC.

3. *A. patens*. | 4. *A. occidentalis*.

Section 3.—Involucre more or less resembling the leaves, usually distant from the flower. Achenia without tails.

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| 5. <i>A. Baldensis.</i> | 10. <i>A. cylindrica.</i> |
| 6. <i>A. parviflora.</i> | 11. <i>A. Virginiana.</i> |
| 7. <i>A. nemorosa.</i> | 12. <i>A. dichotoma.</i> |
| 8. <i>A. deltoidea.</i> | 13. <i>A. multifida.</i> |
| 9. <i>A. Richardsons.</i> | 14. <i>A. narcissiflora.</i> |

1.—*ANEMONE HEPATICA*, *Linnaeus*.

Plant aculescent; leaves numerous, all radical, (from a tufted rhizome), long-stalked, lamina of three rounded obtuse lobes (slightly overlapping) with entire margins, the lateral lobes occasionally bi-lobed. Flowers many from the same root, on separate stalks; involucre three-leaved, so close to the flower as to resemble a true calyx. Sepals six (in two rows), varying in number to nine (in three rows), petal-like, elliptic-oblong, those of the outer row alternating with the approximating involucre leaves, size and colour variable, (white, rose, purple, blue). Stamens usually from eighteen to twenty-one. Carpels normally about twenty-seven. There is an apparent circle of hairs between the involucre and the outer row of sepals, similar to the pubescence of the rest of the scape, but nothing between the sepals and stamens to represent petals. The inner verticil of sepals might be regarded as petals were it not for the numerous examples in this order of the absence or abnormal form of petals. Leaves, and especially the petioles and flower-stalks, also the external surface of the involucre leaves, covered, more or less, with silky pubescence, which becomes less conspicuous on the lamina as the foliage matures, and ultimately disappears on its upper surface. Achenes hairy, collapsing so as to become furrowed.

Anemone Hepatica. Linn., Sp. Pl., I, p. 758, (the European plant.) Michaux, Fl. B. Am., I, p. 119. Bigelow, Fl. Boston, p. 135. Lawson, Ranunc. Can. p. 29. Watson Index Bibl., I, p. 4. Macoun, Cat., No. 17. Lloyds, Drugs and Meds. N. Am., p. 37, figs., 13, 16, 17.

Hepatica triloba. Chaix, in Villars, Hist. Pl., Dauphine, I, p. 336 (1786). Pursh, Fl., II, p. 391. Nuttall. Elliott. Barton. Hook., Fl. B.-A., I, p. 8. Torr. & Gr., Fl., I, p. 15. Chapman. Gray, Manual, ed. 5, p. 38. Provancher, Fl. Can., p. 7.

H. triloba, *δ. foliorum lobis obtusis*. Hook., Fl. Bor.-Am., I, p. 9.

H. triloba α. obtusa. Torr. & Gr., Fl. N. A., I, p. 15.

H. triloba β. Americana, DC. Syst., Nat., I, p. 216.

H. Americana. Ker, Bot. Reg., t. 387. DC. Prod. Don. Nutt.

Herba Trinitatis. Dalechamps, Hist. Gen. Pl., 1274, f. 1, 2, (ann. 1586).

Trifolium Hepaticum. Mentzelius, Index Nom. Pl. Multilinguis, p. 307, (1682).

Hepatica. Gronovius, Fl. Virginica, p. 61, (1748).

Common in rich woods in central Ontario, in country bordering on the lake and river. Very abundant on wooded banks near the Grand Trunk Railway line, between Kingston City and Kingston Mills, (flowers of several colours). Longpoint, on Gananoque River, one form with five-lobed leaves infested by a parasitic fungus (*Uredo*), May, 1862.—*Lawson*. Very abundant in Caledon, June 1862.—*Rev. C. I. Cameron*. Mountain side west of Hamilton, 6th April, 1860.—*Judge Logie*. Belleville, abundant in rich woods.—*Macoun*.

Rocky woodlands west of Brockville, not rare; and Ottawa, lot 0, rare.—*B. Billings jr.* Penetanguishene, Lake Huron, in flower 25th April.—*C. C. Todd.* Ottawa (not so common as *A. acutiloba*).—*Maroun.* Petit Cap St. Joachim.—*Provancher.* From Isle of Orleans, westward, rather rare in Quebec Province.—*Brunet.* St. Stephen, N.B., in fl. May 10, 1879.—*Mr. Vroom.* Keswick Ridge, N.B.—*J. Moser.* Windsor, N.S., rare.—*Prof. How.* Pictou, N.S., very rare.—*A. H. McKay.* Bridgewater, N.S.—*Rev. E. Ball.* Sitka.—*Rothrock.*

In woods in the central limestone tracts, from Canada to lat. 52°. Mr. Drummond found it as far north as lat. 55°, in the secluded alpine valleys on the eastern declivity of the Rocky Mountain ridge.—*Richardson,* in Hook., Fl. B.-A. (Doubt has been expressed regarding the Winnipeg and Rocky Mountain habitats, yet Rothrock reports the plant from Sitka.)

Sir William Hooker stated (Fl. Bor.-Am., I., p. 9, 1833) that there could be no question of the identity of the American and European individuals of this species, but, in view of the increased importance of studying carefully the relationships of forms that have been long geographically separated, it would be worth while, when opportunity offers, to compare carefully the American with the European forms, especially in a state of cultivation, which might possibly throw more light on their relations than we now possess. *Mentzelius* (1682) enumerates double-flowered, white-flowered and red-flowered varieties; many double-flowered varieties, originating from the European plant, have been long in cultivation. *De Candolle* (Syst. Nat.) distinguished the American plant from the European one by its pilose petioles and scapes. In the American plant, also, the sepals appear to be smaller in proportion to the size of the leaflets of the involucre.

Mr. Millsbaugh (Bulletin Torrey Bot. Club, XI., p. 55) notices some abnormal indigenous forms observed at Binghamton, N.Y.: (1.) Plants with deep blue sepals with a white or light blue margin, all absolutely stamenless. (2.) Plants with pure white flowers, all of these having nine sepals, and resembling the flowers of *A. nemorosa*.

This species extends to Florida, occurring there in shady woods, where however its near ally, *A. acutiloba*, is not known. "Hepaticas are amongst those plants of which the seed will not germinate if dried and stored, but which will come up freely from the self-sown seed, if the conditions are favourable. After the flowering is over, the crown of the plant should be sprinkled with fine peat soil, or some equivalent, until the base of the leaf stalks is covered. Into this the seeds fall, and about the time that active growth commences in the parent plant in autumn, they germinate, producing a pair of leaves simultaneously with the growth of the new leaves on the old plant. When the leaves are fully developed, the seedlings may be removed. Some flower the next year. They generally follow the colour of their parent, though pink seedlings occasionally come from blue plants. More seedlings come up amongst the leaves than outside them." (Rev. C. Wolley Dod, Gard. Chro., Feb. 16, 1884.)

2.—ANEMONE ACUTILOBA, *Lawson.*

Resembles the preceding; the leaves are even more symmetrical in shape, but the lobes or segments are elongated-tapering, gradually narrowed from below the middle to an acute point. The involucreal leaves and sepals are also more or less acute. Flowers in May. So far as observed, intermediate forms do not occur.

Anemone acutiloba. Lawson, *Ranunc. Canad.*, p. 30. Watson, *Bibl. Index*, I., p. 3. Macoun, *Cat.*, No. 18.

Hepatica triloba var. *acuta*. Pursh, *Fl.*, p. 391. Hook., *Fl. Bor.-Am.*, I., p. 18. Torr. & Gr., *Fl. N. A.*, I., p. 15.

H. triloba β. *foliorum segmentis acutis*. Hook., *Fl. Bor.-Am.*, I., p. 9.

H. triloba β. *acuta*. Torr. & Gr., *Fl. N. A.*, I., p. 15.

H. acutiloba. DC. *Prod.*, I., p. 22. Gray, *Gen.*, I., p. 22, t. 5. *Manual*, p. 38.

Anemone Hepatica var. *acuta*. Bigel., *Fl. Bost. ed. I.*, p. 135.

This is essentially an Ontarian and Northern States species, being scarce in the South and West and quite unknown in Europe.

Longpoint, Gananoque River, May 7, 1861, abundant; near Kingston Railway Depot, 2nd May, 1868; two miles west from Kingston Mills, 24th May, 1859.—*Lawson*. Camden.—*Dr. Dupuis*. Prescott, Ottawa, etc., common in woods.—*B. Billings jr.* Very abundant in dry woods, Belleville.—*Macoun*. Artemisia, May 12.—*Rev. C. I. Cameron*. Point Lewis, P.Q.—*Brunet*. Common around Montreal; abundant about Ottawa.—*Macoun*. Northumberland Co., Ont.—*Macoun*.

The *Hepatica* group of *Anemone* (*A. Hepatica* and *A. acutiloba*) is connected with the other species of the genus, such as *A. nemorosa*, through *A. angulosa*, of Transylvania DC. *Syst. I.*, p. 217, figured in "Gartenflora," t. 419, which has a calyx-like involucre like the true *Hepaticas*, and in foliage and flowers resembles *A. Apennina*. *A. angulosa* has an approximate involucre of three leaves much smaller than the sepals, which are from 6 to 9 in number as in the *Hepaticas*, that is, there are two or three whorls.

3.—ANEMONE PATENS, *Linnaeus*.

Whole plant covered with long silky hairs when young, losing much of the hairiness as the parts mature. Leaves radical, from a strong root-stock, long-petioled, ternately divided into narrow linear segments. Scape 1-flowered. Flower large, appearing before the leaves, involucre sessile, like the leaves, becoming distant from the flower by the elongation of the upper part of the stalk. Sepals 5 (or more), large, externally velvety with short hairs. Carpels with long plumose tails. Flowers (sepals) purplish, or of violet shades, sometimes very pale. Petals are represented by a few very small processes like abortive-stamens. Stamens numerous. The involucre, and that portion of the flower-stalk below it, are densely villous, with long silky hairs; the upper portion of the stalk, which is very short at first, becomes much elongated in fruit, and scarcely villous or nearly glabrous. The flower of the Siberian plant is white, according to Linnaeus. A small form from Fort Simpson, summer of 1853, (*McTavish*) has the involucre divided into linear, but rather broad, segments, very sparingly villous, and the sepals are almost glabrous.

Anemone patens. Linn., *Sp. Pl.*, ed. 3, p. 759. DC. *Syst. Nat.*, I., p. 191. Regel, *Fl. Ost.-Sib.*, I., p. 20. Hook., *Fl. Bor. Am.*, I., p. 4. Torr. & Gr., *Fl.*, I., p. 11. Gray, *Manual*, ed. 1, p. 5. Rothr., *Fl. Alaska*, p. 442. Provancher, *Fl. Canad.*, p. 6. Hook. f., *Arctic Pl.*, p. 283.

Clematis hirsutissima. Pursh, *Fl.*, II., p. 385. DC. *Syst. Nat.*, I., p. 155.

A. Ludoviciana. Nutt., *Gen.*, II, p. 20.

A. Nuttalliana. DC. Syst. Nat., I., p. 193. Richardson, in Frankl. Jour., p. 12. Nuttall, Jour. Acad. Phil., V., p. 158.

Pulsatilla Nuttalliana. "Spreng. Syst., II, p. 633." Gray, Manual, ed. 2, p. 4.

A. flavescens. "Zucc., in Regensburg Zeitung, I., p. 371."

P. patens, *f. Wolfrangiana*. Trautv. & Meyer (exc. syn.), according to Regel.

P. patens. Gray, Gen., I., p. 18, t. 3. Pl. Fendl., p. 4. Lawson, Trans. Bot. Soc., Edin., X., p. 346. Ranunc. Canad., p. 22.

A. patens, var. *Nuttalliana*. Gray, Manual, ed. 5, p. 36. Watson, Bibl. Index, p. 5. Macoun, Cat., p. 12.

Profusely in the eastern prairie district; and more scattered in the central limestone tracts, from lat. 45° to 67° on the Mackenzie.—*Richardson*. Valleys in the Rocky Mountains.—*Drummond*, *I. Anglas*.

Fort Reliance, 63° N. 109°.—*W. R. King*, (Back's Exped.) Cumberland House, alt. 900 feet, in fl. May 1st, 1820.—*Richardson*. Carlton House, lat. 52° 51' N., long. 106° 13' W., on the eastern limits of the Saskatchewan prairie lands, elevation above the sea about 1,100 feet, April 22, 1827, in fl.—*Richardson*.

Fort Simpson, 1853; between Fort Youcon and Lapierre House, west side of Rocky Mountains; Mackenzie River, near Fort Simpson, 8th June; Fort Chipewyan, 4th and 16th May, 1861; Fort Simpson, in fl.; Yukon River; on Anderson River and at Fort Good Hope; Rocky Mountains, Van Express Party, spring of 1854; Athabasca River, 31st July, 1852, in fl.—*McTavish*. Lake Manitoba, June, July, 1861, in fl. and fr.—*Dr. Schultz*. Cypress Hills, 9th June, 1883.—*Dr. G. M. Dawson*. Manitoba House, Lake Manitoba, June 18th, 1881.—*Macoun*. Alaska.—*Rothrock*.

This species extends to New Mexico. It is widely spread through the Russian dominions of Northern Europe and Asia. Prof. Macoun observes that it is abundant on dry gravelly soil from the eastern margin of the prairie region, through the Rocky Mountains, westward to the coast ranges.

Sir William Hooker, in Fl. Bor.-Am., remarked: "There is no difference whatever between this American plant and the *A. patens* which I possess from the Russian Empire, and from Silesia on the borders of Poland. Both are liable to vary in the breadth of the segments of their leaves, and in the colour of their flowers. Mostly, however, these are purple. The pale yellow-flowered variety from Siberia is cultivated in England. The plant affects sandy soils, and its blossoms appear among the earliest of the season." On May 25, 1883, I found it blooming brightly on dry knolls at the Crested Buttes, Colorado, the ground covered with a few inches of snow that had fallen the night before, but not deep enough to bury the large flowers. The recent tendency has been to regard our American plant as essentially distinct from the European. I am still doubtful by what characters to separate it, and have, on that account, retained the Linnæan name. It is a variable plant in Europe and Northern Asia. In the allied *A. Halleri* of Switzerland, the divisions of the leaves and involucre are proportionately much shorter, and the flower rather larger. *P. vulgaris* of Europe has pinnatisect foliage.

4.—*ANEMONE OCCIDENTALIS*, Watson.

"More or less silky-villous; stems stout, $\frac{1}{2}$ to $1\frac{1}{2}$ feet high, 1-flowered; radical leaves large, long-petioled, biternate and pinnate, the lateral primary divisions nearly sessile, the segments pinnatifid with narrow laciniately-toothed lobes; involucre leaves similar, nearly sessile, about the middle of the stem; sepals 6 or 7, six to nine lines long, white or purplish at base; receptacle conical, becoming much elongated, sometimes $1\frac{1}{2}$ in. long; achenes linear-oblong, the tails at length $1\frac{1}{2}$ in. long, reflexed." Watson.

Mr. Watson points out (Proc. Am. Acad., 1876, Vol. XI, p. 121) that this species differs from *A. alpina* of Europe and the Caucasus (with which it had been long conjoined) in its more finely and narrowly dissected leaves, which have also the primary divisions much more shortly petiolulate, and in the lengthened receptacle (sometimes an inch and a half long) which in the other is small and hemispherical (even in fruit). Sir William Hooker describes Drummond's specimens as from 6 in. to $1\frac{1}{2}$ ft. high, flowers white, with a purplish tinge at the base, heads of pericarps very large, awns long, very silky.

A. occidentalis. Watson, Proc. Am. Acad., XI, p. 121. Brewer & Wats., Bot. Calif., I, p. 3. Watson, Bibl. Index, I, p. 443. Macoun, Cat., I, p. 11.

A. alpina. Hook., Fl. Bor.-Am., I, p. 5 (excl. syn.) Torr. & Gr., Fl. I., p. 11. Hook. f., Arct. Pl., 283 and 311, in part. Rothr., Fl. Alaska, 442. Not. of Linn., DC., Regel, &c.

Pulsatilla alpina. Lawson, Ranunc. Canad., p. 23 (excl. European synonymy).

Eastern declivity of the Rocky Mountains, lat. 52° to 55° .—*Drummond*. Hitherto unnoticed as a native of America.—*Hooker*, Fl. Bor.-Am. (1833). Top of Rocky Mountains and W. Summit, near Kootanie Pass, 26th July, 1833.—*Macoun*. Mountains of Southern British Columbia and Rocky Mountains, near the 49th parallel, at 6000 ft. altitude.—*Dr. G. M. Dawson*. Kotzebue Sound.—*Capt. Beechey*, (Torr. & Gr.) *Rothrock*. Mount Shasta and Lassen's Peak, California.—*Brewer & Watson*. The indication in "Botany of California" of the Gulf of St. Lawrence (if our Atlantic St. Lawrence be meant) is no doubt an error. Mr. Watson suggests (Bot. Calif.) that the *A. alpina* of Arctic American collectors is referable to 'his species, and I have therefore assumed that the Kotzebue Sound plant belongs here. *A. occidentalis* had not been separated as a species in 1860, when Sir Joseph Hooker (Distr. Arc. Pl., p. 311) observed that he had seen but one Arctic American specimen of *A. alpina*, which was much stunted, and that it had not been found east of the Caucasus in the Old World, though it is not uncommon in North America on both sides of the Rocky Mountains.

5.—*ANEMONE BALDENSI*, Linnaeus.

Leaves nearly glabrous and somewhat fleshy, ternately divided into laciniate tripartite segments, lobes linear obtuse; the involucre leaves like the others, and shortly petiolate, multifid. Sepals 8—10 (DC.), 6—8 (Hook.), oblong-suboval, obtuse, spreading, somewhat villous externally, tinged with blue. The Mount Balda Anemone.

Anemone Baidensis. Linn. Mantissa, p. 78, DC. Syst. Nat., I, p. 203. Hook., Fl. Bor.-Am., I, p. 5. Torr. & Gr., Fl. N. A., I, p. 12. Macoun, Cat. No. 8.

A. multifida. Watson, Bibl. Index, I, p. 4.

Arid places on the eastern summits of the Rocky Mountains, lat. 52° to 55°.—*T. Drummond*, in Hook., Fl. Bor.-Am.

This is a well-known plant in the Swiss Alps and other mountainous districts of continental Europe, but its American record is simply that quoted above from Hooker's Flora. Its southern European range is not in favour of its occurrence on the Rocky Mountains, but Sir William Hooker seems to have had no doubt whatever of the identity of Drummond's specimens with the European plant. Watson refers them to *multifida*, and may be correct, but I know not on what ground.

6.—*ANEMONE PARVIFLORA*, Michaux.

Leaves rounded tripartite, with cuneate, crenately lobed divisions. Involucre usually near the middle of the stem, of 2 or 3 leaves, which are sessile or petioled. Flower solitary, large, sepals 5, oval, white, or the outer surface tinged with blue. Carpels in a globose, compact, woolly head. Plant variable in height, from a foot to 2 or 3 inches in the sub-arctic specimens. In a specimen from the Yukon River the involucre is close to the base, and hid in the radical leaves, the naked flower-stalk six inches long. In Prof. Macoun's specimen from North Kootanie Pass, 1883, the root leaves are almost reniform, only slightly incised, not divided, involucre sessile, incisedly divided into broad lobes. Hooker, Torrey and Gray, and other botanists, give the number of sepals as 6; they are probably variable. In all my specimens, 16 in number, in which they can be counted, the number is 5, except in one monstrous flower from York Factory, which has 9 ligulate sepals.

Anemone parviflora. Michx., Fl. Bor.-Am., I, p. 319. DC. Syst., I, p. 200. Hook., Fl. Bor.-Am., I, p. 5. Torr. & Gr., Fl. N. A., I, p. 12. Hook. f., Arct. Pl., p. 283. "Pl. Bourgeau, 254." Gray, Manual, 5 ed., p. 37. Lawson, Ranunc. Canad., p. 23. Provancher, Fl. Can., p. 6. Watson, Bibl. Index, I, p. 5. Macoun, Cat. No. 7.

A. cuneifolia. Jussieu, Ann. du Mus., III, t. 21, f. 3. Persoon, Synops. Pl., II, p. 97. Pursh, Fl., II, p. 386.

A. tenella. Banks in Herb. (DC).

A. borealis. Richardson in Frankl. 1st Jour., ed. 2, App., p. 21 (a small form).

A. sylvestris, *β. alba minor*. Schrank, Pl. Labr., 28, (Watson).

Hudson Bay.—*Michaux*. East coast of Hudson Bay.—*Dr. R. Bell*. Eastern primitive district, central limestone tract, barren grounds, and Rocky Mountains, from lat. 45° to the Arctic Sea, lat. 70°.—*Richardson*, *Drummond*, in Hook. Fl. B. A. Labrador.—*Pursh*, *Morrison*.—Newfoundland.—*Herb. Banks*, (DC.) Kotzebue Sound.—*Rothrock*. Kootanie Pass, Rocky Mountains.—*Dr. G. M. Dawson*. Magdalen River, St. Anne River and Shickshock Mountains, Gaspé, P.Q.; Pic River, Lake Superior; Bow River, near Morley, N.W.T.—*Macoun*. North Kootanie Pass, 1883.—*Macoun*. It becomes abundant northward and extends to the Arctic Sea, lat. 70°.—*Hook. f.* Labrador and Anticosti.—*Pursh*. Anticosti, S.W. Point.—*A. E. Verrill*, 23rd July, 1861. Dartmouth River, Gaspé, found in fl. at mouth of Lady's Steps Brook, June 23, 1862, and plentiful up the river.—*Dr. J. Bell*. The

plant is not so rare in the Northwest, judging from specimens received from *Governor McTavish*, which are as follows:—Between Severn and Trout Lake, June; Mackenzie River, 29th May, 1852; Trout Lake, June; between Anderson River and Fort Good Hope; Fort Simpson, summer of 1853; west of Rocky Mountains, between Lapierre House and Fort Yukon; Athabasca River, 31st July, 1852; Yukon River; York Factory. Lake Superior, northward and westward.—*Gray*.

7.—ANEMONE NEMOROSA, *Linneus*.

Radical leaf solitary, arising from a short, slender, horizontal rhizome, and composed of three broad, cuneately lobed or slightly pinnatifid incisely-toothed leaflets. Flower solitary, on a stem which is bare below, but with an involucre half way up of three stalked leaves divided like the root leaves, the leaflets incisely toothed, the lateral ones with large basal lobes (more usually divided into separate leaflets (compound) in English, Scotch and German specimens, but only deeply pinnatifid in our American plant), terminal leaflet of involucre leaf slightly stalked, all the lobes acuminate. Sepals 5 or 6, elliptical, glabrous on both sides (bright white, sometimes tinged with pink or purple). Carpels few, oblong, keeled, pubescent, with hooked beaks as long as the body of the carpel. Plant sparingly hairy. The Wood Anemone. Anemone, or Wind Flower, of the English poets.

Anemone nemorosa. Linn. Sp. Plantarum, p. 762. Flora Danica, t. 549. DC. Syst. Nat., I., p. 204. Prod., I., p. 20. Continental European and English Floras. Hook., Fl. Bor.-Am., I., p. 6. Torr. & Gray, Fl. N. Am., I., p. 12. Hook. f., Arct. Pl., p. 283. "Pl. Bourgeau, 254." Gray, Man., p. 38. Lawson, Ranunc. Canad., p. 27. Traill, Canad. Fl., p. 81, t. 10. Brewer & Watson, Bot. Calif., I., p. 4. Watson, Bibl. Index, I., p. 5. Macoun, Cat. No. 9.

A. quinquefolia. Linn. Sp. Pl., p. 762.

A. patula. Raf.-Schmaltz in Desv. Jour. Bot., 1808, I., p. 230. DC. Syst. Nat., I., p. 214. Prod., I., p. 22.

A. lancifolia Pursh, Fl. II., p. 386. DC. Syst. Nat. I., p. 205. Prod. I., p. 20. Torrey, Compend., p. 223.

A. minima, DC. Syst. Nat., I., p. 206, appears to be a diminutive form of this species from the Alleghanies.

Ἀνεμώνη λειμωρία. Theophrast. Hist., lib. 6, c. 7; lib. 7, c. 8, ex. Spreng. Hist. Rei. Herb., I., p. 94. DC.

Canada, and thence to the south end of Lake Winnipeg; not seen to the north of lat. 53°.—*Richardson*. Country to the eastward of the Rocky Mountains.—*Drummond*. Westward of the Rocky Mountains.—*Douglas*. Woods in rear of Kingston, also neighbourhood of Toronto, and other localities in Ontario, occasional, but not common.—*Lawson*. Common, Port St. Francis, Q., Niagara and Malden, Ont.—*Dr. P. W. MacLagan*. Barlow's woods east from Belleville, Ont.—*Macoun*. Gros Cap, June 15.—*Prof. Bell*. Gaspé; Durvogan (lat. 56°), on Peace River; British Columbia; Vancouver Island.—*Macoun*. Dean or Salmon River, British Columbia.—*Dr. G. M. Dawson*. Not uncommon in New Brunswick.—*Fowler*, who has sent a specimen from Bass River, Kent. Common at the Saguenay.—*Provancher*.

Middle Stewiacke, N.S.—*G. G. Campbell*. Newport, N.S.—*H. H. Bell*. Mr. Barnston found this plant common to the westward of Lake Superior, along the frontier line of the United States, in rich alluvial soils. A form, characterized by Hooker as unusually hairy, was found by R. King at Lake of the Woods. (*Beck's Exped.*) In western Europe this species is extremely common, and Regel has it from various collectors in Kamtschatka, etc.

Of the British American specimens, Sir William Hooker observes: "Flowers white, varying to purple, as in Europe, but the sepals are more constantly 5, and the leaves, though occasionally as broad as with us, are usually narrower and disposed to be more compound." This remark probably applies rather to the Northwest or Hudson Bay forms than to the Ontario ones. The plant varies much in the division of the foliage, size of parts and other characters. In what may be regarded as the well-developed typical form, the leaves are trifoliate, terminal leaflet shortly petiolulate, rhomboidally lanceolate, incisely lobed and toothed in the upper half, lateral leaflets nearly sessile, very deeply divided into two lobes, the lateral lobe oblique, both incisely toothed in the upper part. In specimens from Hudson Bay Territories (*McTavish*), and Dean or Salmon River, B. C., (*Dr. G. M. Dawson*), 24th June, 1877, the involueral leaves are trifoliate, the leaflets sessile, incisely toothed, not divided nor lobed. Specimens from Bleeker's Woods, near Belleville, Ont., (*Macoun*), have compact, hairy, involueral leaves, either of five closely sessile rhomboidal leaflets, or of three such leaflets, with the lateral ones very deeply lobed, all the leaflets incisely toothed, the lobes acute, not acuminate nor spinose, sepals 5, broadly oval-oblong. A form from Oaklands, near Hamilton, May 31, 1859, (*Judge Logie*), has the radical and involueral leaves of 5 distinct leaflets and corresponds to the *A. quinquefolia*, Linn., l. c.

In our Canadian plant, the upper part of the petiole appears to be generally more hairy than in European specimens, in which it is mostly nearly glabrous.

8.—*ANEMONE DELTOIDEA*, Hooker.

Slightly hairy, radical leaves long-petioled, from a filiform rhizome, ternate, leaflets (and the three sessile involueral leaves), broadly oval, subdeltoid, or rhomboid, more or less deeply trifid, acute, with a few incisions at the tips. Scape erect, slender, 8-12 inches, with roughish hairs. Flower solitary (as large as that of *A. dichotoma*), an inch across. Sepals 5-6, white, oval or obovate, obtuse, spreading, nearly glabrous.

A. deltoidea. Hook., Fl. Bor.-Amer. I., p. 3, t. 3. A. (Scape with involucre and flower.) Torr. & Gr., Fl. I., p. 13. Brewer & Watson, Bot. Calif. Macoun, Cat., No. 10.

In thick shady woods of the Columbia, near its confluence with the sea.—*Douglas, Scouler, Nuttall*.

Salmon River, near Salmon House, Coast Range, British Columbia, 10th July, 1876.—*Dr. G. M. Dawson*, in Herb. Canad. Survey.

9.—*ANEMONE RICHARDSONI*, Hooker.

Plant with long trailing runners, rooting and giving off single, trifidly or pinnatifidly cut, petiolate leaves; peduncles naked below, with an involucre at the middle, of

three trifidly-cut leaflets. Sepals 6, spreading. Whole plant with a slight, but somewhat rough, pubescence. Carpels not numerous, compressed, glabrous, with very long deflexed uncinate beaks.

Anemone Richardsoni. Hooker, in Franklin's 1st Journal, ed. 2, App., p. 21. Fl. Bor.-Am., I., p. 6, tab. 4, fig. A. Torr. & Gray, Fl. N. A., I., p. 13. Hook. f., Arct. Pl., p. 283 and p. 311. Lawson, Ranunc. Canad., p. 29. Watson, Bibl. Index, I., p. 6. Macoun, Cat., No. 11.

A. ranunculoides, var? *Richardsoni*, in Franklin's 1st Journal, ed. 1, App., p. 740.

A. arctica. Fischer MSS. (Hooker.)

A. Vahlit. Hornemann, Flora Danica, p. 13, t. 2176, according to Lange, (*Hook. f.*)

Eastern primitive district, shores of Hudson Bay; barren ground, Rocky Mountains, from 55° to 68°, in wet mossy ground.—*Richardson, Drummond*. Unalashka and throughout all Siberia.—*Dr. Fischer, (Hooker.)* Churchill, 3rd July, 1853, and York Factory.—*McTavish*. York Factory, August 15th, 1868.—*Dr. Bell*. Pethemich Island, Great Slave Lake, 27th June, 1855.—*Captain Rae*. Kotzebue Sound and Yukon River.—*Rothrock*. Greenland.—*Hook. f.*

Captain Rae's specimens are smoothish, and there is an old pencil memorandum identifying them with "a form gathered by Drummond in 1843, Chippewa," the specimens of which I had probably seen in the Edinburgh Herbarium.

Sir Wm. Hooker observes that the ripe fruit is highly curious; the numerous long slender styles, all bent downwards, have the appearance of a very coarse and shaggy head of hair; under the microscope, the points are seen to be rolled up or uncinate in the dry state, only slightly curved when moist.

10.—ANEMONE CYLINDRICA, *A. Gray*.

Leaves ternately divided into cuneate segments, cut and toothed. Peduncles several, very long and naked above, all arising from an involucre of stalked ternately divided leaves. Sepals 5, obtuse, greenish white. Carpels in a long cylindrical head. Plant 1 or 2 feet high, shorter, more silky in foliage than the next, with more slender wiry stems and more finely divided leaves, the inflorescence less branched, with fewer involucels. Prof. Gray, the author of this species, observes that it often flowers after the manner of *A. Virginiana*, developing involucels and secondary peduncles, and that the leaves of the involucre are twice or thrice as many as the flower stalks.

Anemone cylindrica. Gray, Ann. Lyc. N. Y., III, p. 221. Torr. & Gr., Fl. N. A., I, p. 13. Torr., Fl. N. Y. S., I, p. 8. Gray, Pl. Fendler, p. 4. Manual, p. 37. Lawson, Ranunc. Canad., p. 25. Watson, Bibl. Index, I, p. 3. Macoun, Cat. No. 12. Lawson, Proc. Inst. Nat. Sc. Nova Scotia, VI, pt. 1, p. 73.

Near Belleville, also Mr. Duff's farm, Kingston; August 8, 1861; Pittsburg, September 6, 1861; Delta, 1st July, 1862; also Kingston Mills,—all in Province of Ontario.—*Lawson*. Trail to Red River, 1860, and between Snake Hill and Pembina, 1862.—*Dr. Schultz*. Belleville, common on sandy hills.—*Macoun*. Township of Durham.—*Brunet*. Ottawa.—*Fletcher*. Extends south to Santa Fee, New Mexico.—*Pl. Fendl.*

Grown by Mr. P. Jack at Bellahill, Halifax Co., from seeds collected by Mr. Howard Stokes in the Pembina Mountain district, summer of 1880.

11.—ANEMONE VIRGINIANA, *Linneus*.

Leaves ternately divided into acuminate 3-cleft incisely serrated segments, or leaflets. Peduncles several, very long, all arising from an involucre of 2 or 3 petioled ternately divided leaves, the primary or terminal peduncle naked, the secondary ones with 2-leaved involucels, whence arise other lateral peduncles giving the plant a branched character. Sepals 5, greenish yellow or white. Carpels in an oval or oblong head, soft with white or tawny wool. Plant 2 or 3 feet high, hairy. The large heads of carpels and stalked leaves of the involucre distinguish this species from *A. dichotoma*.

A. Virginiana, Linn. Sp. Pl., p. 761. Aiton, Hort. Kewensis. Michaux, Fl. B. A., I., p. 320. Persoon, Synops. Pl., II., p. 97. Pursh, Fl., p. 388. DC. Syst. Nat., I., p. 208. Prod., I., p. 21. Hook., Fl. Bor.-Am., I., p. 7, t. 4, fig. B. Torr. & Gr., Fl. N. A., I., p. 13. Torr., Fl. N. Y., I., p. 8. Chapman, Fl. S. U. S., p. 5. "Pl. Bourgeau, 254." Gray, Manual. Wood, Cl. Bk. & Fl., p. 203. Lawson, Ranunc. Canad., p. 25. Watson, Bibl. Index, I., p. 6. Macoun, Cat. No. 13.

A. hirsuta. Mönch, Meth. Pl. Hort. Marburg., p. 105. (1794.)

Anemone Virginiana. Hermann, Paradisus Batavus, (anno 1698). Tournefort, Inst. Rei Herb., I., p. 277.

Anemone caule ramoso petalis lanceolatis. Gronovius, Fl. Virginica, p. 165. (1739.)

Anemone Caroliniana flore parvo virescente. Plukenet, Almagestum, p. 30. (1796.)

Jacket River, New Brunswick, 1882; Falls of Niagara, Ont., Sept., 1858; Kingston, 9th August, 1861; on the Humber, near Toronto, 4th June, 1862.—*Lawson*. Common on plains at Castleton; rare around Belleville.—*Macoun*. Montreal, St. Catharines and Malden.—*Dr. P. W. MacLagan*. Dartmouth River, Gaspé, July 5, 1862.—*Dr. Bell*. Carroll's Point, East Flamboro', 7th July, 1859.—*Logie*. Rocky woodlands near Brockville; also Prescott northward to Ottawa, rather rare.—*B. Billings jr.* Between Snake Hill River and Pembina, August, 1860.—*Dr. Schultz*. St. Joachim.—*Provancher*. Mr. Barnston speaks of this species as, in the West, rarer than *A. dichotoma*, and scarcely reaching the Rocky Mountains. It extends south to South Carolina.—*T. & G.* Central limestone tract, and eastern prairie lands, as far north as lat. 55°, spreading more widely in Canada than to the northward; on rich banks of rivers.—*Richardson, Drummond*, in Hook., Fl. B.-A. Mouth of Upsalquitch River, Grand Falls of St. John, N.B.—*Fowler*. Madeline River, Gaspé; Fort William; plains to Rocky Mountains.—*Macoun*.

12.—ANEMONE DICHOTOMA, *Linneus*.

Leaves deeply cleft or divided into from 5 to 7 leaflets, which are cuneate, incised-toothed. Flowers several, primary peduncle with a general involucre of three sessile leaves, the lateral stalks with two-leaved involucels, &c. Flower $1\frac{1}{2}$ inch broad. sepals obovate, white. Carpels in a hemispherical head, flat, orbicular, hairy. A handsome free-growing plant.

Anemone dichotoma. Linn. Amœn. Acad., I., p. 155, (1749). Sp. Pl. ed. 3, I., p. 762. Aiton f., Hort. Kew., ed. 2, III., p. 339. Pursh, Fl., p. 387. DC. Syst. Nat., I., p. 210.

Prodromus, I., p. 21. Maximowicz, Prim. Fl. Amur., p. 18. Regel in Radde's Reisen, I., p. 17. Lawson, Trans. Bot. Soc. Edin., X., p. 346. Ranunc. Canad., p. 24. Watson, Bibl. Index, I., p. 8. Macoun, Cat., No. 14.

A. Pennsylvanica. Linn. Mant. II., p. 247 (1767). Aiton, Hort. Kew., ed. 1, II., p. 256. Pursh. Fl., p. 387. DC. Syst. Nat., I., p. 209. Prodromus, I., p. 21. Richardson in Franklin's Jour., 13. Torrey, Flora New York State, I., p. 19, t. 4. Hook., Fl. Bor.-Am., I., p. 8, t. 3, f. B. Torr. & Gr., Fl. N. A., I., p. 14. Gray, Gen. III., I., p. 20, t. 4. Manual, 5 ed., p. 37. "Pl. Bourgeau, 254." Matthew, Canad. Naturalist, ser. 2, XII., p. 158.

A. Canadensis. "Linn. Syst., ed. 12, III., App. 231."

A. irregularis. "Lam. Dict., I., p. 167."

A. aconitifolia. Michaux, Fl., I., p. 320. Persoon, Synops., II., p. 97.

Linnaeus described as two species, *A. dichotoma*, European, in 1749, and *A. Pennsylvanica* in 1767, for which latter the only habitat given was "Canada." De Candolle pointed out that the American *Pennsylvanica* was similar to the European *dichotoma*, but more slender. Hooker found Dahurian specimens to "entirely accord with the American ones," but in Fl. Bor.-Am. retained the name *Pennsylvanica*.

In woody and prairie tracts by the banks of rivers, from Hudson Bay to the Pacific, and from the United States to near the mouth of the Mackenzie River; not found in the barren grounds.—Richardson, Drummond, Douglas. Lake Winnipeg and Slave Lake.—R. King, Back's Exped. Head of Lake Winnipeg, 1879.—Prof. Bell.

Hardwood Creek, 1861, also Portsmouth, and elsewhere about Kingston, Ontario, June 4, 1859; Frankville, Kitley, 5th July, 1862; near Toronto, 2nd June, 1862.—Lawson. Carroll Point, Hamilton, 7th July, 1859.—Judge Logie. Prescott, Ottawa, &c., common over the country.—B. Billings jr. Lake Superior.—Prof. Bell. Chippawa and Malden, Ont.—Dr. MacLagan. Belleville, common amongst rocks along rivers.—Macoun. Gaspé, banks of Dartmouth River, June 17, July 5.—Dr. J. Bell. Anticosti, July 18, 1861.—Verrill. From the Northwest, I have received specimens as follows, viz.: From Governor McTavish: Mackenzie River, above Fort Simpson, 22nd June; Saskatchewan, 19th July; Lake Nipigon, 1853 (sepals silky); Mackenzie River, between Fort Simpson and Slave Lake, 21st June, 1853. Lake Superior. From Dr. Schultz: specimens from Fort Garry, July and August, 1860; between Wild Rice River and Red Lake River, Sept. 1860; Assiniboine River, July, 1861, sp. No. 62. Lake Winnipeg and Slave Lake.—Capt. Back. Provancher, seems to find the plant rather rare in Quebec Province. Truro, N. S.—Dr. Campbell. Along the St. John River and tributaries.—Fowler. Jacket River.—Lawson. Gaspé; valleys of the Rocky Mountains.—Macoun. Restigouche.—Mr. Chalmers, Fowler's List. Jupiter River, Anticosti, Aug. 28, 1883.—Macoun, in Herb. Canad. Survey. In the States it is confined in range to "West New England to Illinois and north westward" (Gray), whilst in British America it is widely spread, extending from the Atlantic Coast west to the Pacific, and northwards nearly or quite to the Arctic Ocean. Mr. Barnston indicates its range thus: Throughout the extent of the British Territory eastward of the Rocky Mountains, and even westward, though less plentifully.

Cultivated in England in 1768, by Mr. Ph. Miller, flowering in May and June. Mill., Dict., ed. 8., n. 7, (Hort. Kew. ed. 2).

13.—*ANEMONE MULTIFIDA*, *Poiret*.

Leaves ternately divided into cuneiform segments cleft into linear lobes. Flower arising from a primary involucre, which consists of 2 or 3 short-stalked leaves, with 1 or 2 flowers from secondary involucels. Sepals from 5 to 8, oval-obtuse, half an inch long, red, yellow, or white. Carpels in a spherical or oval, very woolly, head. Plant from 6 to 12 inches high.

Anemone multifida. Poiret in Encycl. Meth., Suppl., I., p. 364. DC. Syst. Nat., I., p. 209. Prod., I., p. 20. Hook., Fl. Bor.-Am., I., p. 7. Torrey, Fl. N. Y., I., p. 9, t. 2. Gray, Manual, 5 ed., p. 37. Matthew, Canad. Nat., XII, p. 158. Lawson, Ranunc. Canad., p. 24. Brewer & Watson, Bot. Calif., I., p. 4.

A. Commersoniana. DC. in Deless. Icon., I., p. 4, t. 17. Don, Mill, I., p. 19.

A. Hudsoniana. Richardson in Frankl. Jour., p. 13. Torr. & Gr., Fl. N. A., I., p. 13 and Supp., p. 658.

A. narcissiflora. "Hook. & Arn. Bot. Beechey, 121," (Watson).

A. lanigera. Gay, Fl. Chil. (Walpers, Ann., I., 6.)

Gulf of the St. Lawrence.—*Goldie*. From the shores of Hudson Bay to the western declivity of the Rocky Mountains, and from the United States to near the shores of the Arctic Sea, common.—*Richardson, Drummond*. West side of the Rocky Mountains, near the sources of the Columbia.—*Douglas*, Hook., Fl. Bor. Am. Hudson Bay.—*Herb. Banks*, (DC.)—*Dr. R. Bell*, fide Macoun. Lake Winnipeg.—*R. King*, Back's Exped. On gravelly banks and river shingles, Dartmouth River, Gaspé, June 30, 1862.—*Dr. John Bell*. Fort Garry, July, 1861.—*Dr. Schultz*, Sp. No. 188. The following are from *Governor McTavish*:—Fort Simpson, June, 1860; Nipigon, 1852; Slave Lake, 25th June; Yukon River, adjoining Russian Territory, near Arctic Circle; Slave Lake, June, 1860; Mackenzie River, above Fort Simpson, June 20. The last mentioned specimen is a luxuriant form, referable no doubt to *β. Hudsoniana*, which is apparently not a permanent variety. River St. John above Fredericton; Grand Falls.—*Fowler*. Gaspé; Lake Superior; Lake of the Woods; across the great plains and northwardly by Peace River to British Columbia; Rapid City, Manitoba.—*Macoun*. Also Jupiter River, Anticosti, 28th August, 1883; Pic River, L. Superior, 31st July, 1869.—*Macoun*, in Herb. Canad. Survey. Columbia Valley, B.C., 8th July, 1883.—*Dr. G. M. Dawson*, in Herb. Canad. Survey. Watertown, New York State, and on the south shore of Lake Superior. Douglas collected it near the sources of the Columbia, on the west side of the Rocky Mountains. It likewise grows at Concepcion in Chili, on the Chilian Andes, and at the Straits of Magellan.

14.—*ANEMONE NARCISSIFLORA*, *Linnaeus*.

Whole plant more or less villous. Leaves palmately divided into cuneate segments, incisely cleft, lobes linear, acute. Petiole bearing an umbel of several or (in var. *monantha* DC.) one or two short-stalked white flowers. Involucral leaves sessile, 3 to 5, cleft. Specimens from the mountains of Southern Europe are less hairy than our American plant.

Anemone narcissiflora. Linn. Sp. Pl. p. 763. Bot. Mag. t. 1120. Pursh., Fl. II. p.

387. DC. Syst. Nat. I, p. 212. Prod. I, p. 23. Hook., Fl. Bor.-Am., I, p. 8. Torr. & Gr., Fl., I, p. 14. Wood, Cl. Bk. & Fl., p. 203. Lawson, Ranunc. Canad., p. 30. Watson, Bibl. Index, I, p. 4. Macoun, Cat. No. 16.

A. dubia. Bellardi, App. Fl. Pedem., p. 232, t. 7.

A. umbellata. Lam., Fl. Fr., not Willd. DC.

A. fasciculata. Linn. Sp. Pl., I, p. 763.

North West coast of America.—*Menzies*. Unalashka.—*Nelson*. Kotzebue Sound.—*Hay & Collie*, in Capt. Beechey's collection, specimens 1-flowered.—*Hooker*. Alaska.—*Rothrock*. Alpine region of the Rocky Mountains between lat. 39° and 41°.—*Parry, Hall & Harbour*. "Canada," given for this species by Pursh, has not been confirmed. Newfoundland has been more recently cited by Mr. H. Reeks, who visited that country as an ornithologist in 1866-68, and seems to have made an interesting collection of plants. See London Jour. Bot., IX, p. 16. It is doubtful, however, whether the plant has ever been found in America east of the Rocky Mountains. Sir Joseph Hooker's Arctic table shows its range over the Northern hemisphere as follows:—European Alps; Asia to Altai, &c.; Eastern Asia; Arctic America; N. W. America. (Tab. Arct. Pl., p. 283.)

GENUS IV.—MYOSURUS, *Linneus*.

Bentham and Hooker, Genera Plantarum, I, p. 5.

List of species:—

1. *M. minimus*.

2. *M. aristatus*.

1.—MYOSURUS MINIMUS, *Linneus*.

An annual glabrous or slightly hairy herb, with a tuft of linear leaves and 1-flowered naked scape, 3 or 4 inches high. Receptacle slender, cylindrical, elongating by growth as the carpels (achenes) mature, the latter numerous, oblong, blunt, arranged upon it as an axis, so that it resembles a spike. The elongated receptacle is 1 to 2 inches in length, varying with the vigour of the plant, and usually about half as long as the peduncle.

Myosurus minimus. Linn. Sp. Pl., p. 407. DC. Syst. Nat. I, p. 230. Smith, Bab., Hook., &c. Torr. & Gr., Fl. N. A., I, p. 25. Gray, Manual, p. 44. Chapman, Fl. S. U.S., p. 6. Lawson, Ranunc. Canad., p. 43. Watson, Bibl. Index, p. 15. Brewer & Watson, Bot. Calif., 2 ed., I, p. 5. Macoun, Cat., No. 25.

M. Shortii. Raf. in Am. Jour. Sc., I, p. 379. DC. Prod., I, p. 25.

Ferry Point, opposite Belleville, Ont., 24th May, 1865; Vancouver Island, B.C., 7th May, 1875.—*Macoun*, in Herb. Canad. Survey. Tsi Tsutl Mountains, British Columbia, 19th July, 1876.—*Dr. G. M. Dawson*, in Herb. Canad. Survey. Belleville, Ont., rocky pastures west of Albert College; arid spots north of Cypress Hills, N.W.T.; near Victoria, Vancouver Island, B.C.—*Macoun*. Near Short Creek, Souris River, N.W.T.—*Dr. G. M. Dawson*.

Found in Illinois, Kentucky, Georgia, Louisiana, Arkansas, Oregon, California (wet

places in Sacramento Valley, *Hartweg*; alkaline soil near Livermore Pass, *Brewer*); also in Asia, and in Europe from Montpellier to St. Petersburg, in fields subject to standing water in winter; in England in "damp places in fields," (Bab.) "Cornfields, meadows and pastures in a gravelly soil; the whole plant is acrid."—*Withering*.

In the plant from Tsi Tsuti Mountains, the receptacle is only one-fifth of the length of the peduncle, and the Vancouver Island specimens are of the same form with elongated peduncle.

Dr. Parry, in describing the North American Desert Flora, between 32° and 42° North latitude (*Journal of Botany*, VIII., p. 343-7), gives this as the only Ranunculaceous plant of these desert tracts. The annual desert plants, whose period of growth is strictly confined to a short and uncertain period of spring or fall rains, require for their continued preservation a safe deposit for their usually minute seeds during the prolonged dry season, a condition which is, in great measure, supplied by the porous, sandy and gravelly soil into which they fall and are safely buried, not only out of the reach of climatic influences, but also safe from the destruction of animals. Their growth is rapid and evanescent. In strong contrast to these are the perennial plants with their thick rhizomes or tuberous or tap roots, whose stores enable them to resist prolonged drought, whilst the stems and foliage of others are specially modified to check evaporation. Such modifications of plants adapting them to resist rigorous climatic conditions are also well seen on the western prairies and on the mesa or table-land around the peaks of the Rocky Mountains of the South.

The *Ranunculaceæ*, essentially moisture-loving plants, abound in the northern and Arctic regions, and at all elevations on the mountains of the northern hemisphere where there is moisture and sufficient summer heat for flowering plants. The perennial species disappear on the desert, on the dry prairies, and on the driest parts of the mesa, where herbaceous plants have either to give up the habit of forming thin leaf-organs or to develop enormous rhizomes or roots to enable them to resist the unmitigated drought.

2.—*MYOSURUS ARISTATUS*, *Bentham*.

Resembling the preceding species in habit, small size, and general aspect, the leaves narrowly linear, flower stalk 2 inches or more in length; receptacle in fruit oblong or linear, 2 to 8 lines long; $\frac{1}{3}$ rd the length of the stalk; achenes prominently beaked, the beak nearly as long as the achene. Specimens from Vancouver Island are three or four inches high, nearly as large as *M. minimus*, but the receptacle is more slender. The beaked-achenes form the prominent character of the species.

Myosurus aristatus. Bentham, *Lond. Jour. Bot.*, VI., p. 458. Watson, *Bibl. Index*, I., p.

15. *Brewer & Watson*, *Bot. Calif.*, ed. 2, I., p. 5. *Macoun*, *Cat.*, No. 26.

M. apetalus. Gay, *Hist. Chil., Bot.*, I., p. 31, t. 1, f. 1. Baillon, *Hist. Pl.*, I., p. 43.

Arid soil, Spence's Bridge, B.C., 19th May, 1875; muddy places and on shingle, Vancouver Island, B.C., 7th May, 1875; also Lytton, B.C., May 18th, 1875.—*Macoun* in *Herb. Canad. Survey*. Arid soil west of the Elbow of the South Saskatchewan, 1879; near Reed Lake, lat. 50° 30' N.; long. 107° 20' W.—*Macoun* in *Cat.* In the shade of sagebrush, Carson and Sierra Valleys (California) to Utah; also Chili.—*B. & W.*

GENUS V.—TRAUTVETTERIA, *Fischer & Meyer*.

Fischer and Meyer, Index Sem., 1835, p. 22. Bentham and Hooker, Genera Plantarum, I., p. 5.

1.—TRAUTVETTERIA GRANDIS, *Nuttall*.

Stem 2 to 3 feet high. Leaves alternate, 2-3, distant, the lower long-stalked, the upper short-stalked or sessile, thin, membranous, palmately lobed, the lobes acuminate, toothed, pubescent below, the veins scarcely prominent. Flowers in a nearly simple, corymbose cyme. Carpels in a roundish head, beaked.

Trautvetteria grandis. Nuttall in Torr. & Gr., Fl. N. Am., I., p. 37. Walpers, Rep. I., p. 60. Torrey, Bot. Wilkes, p. 213. Brewer & Watson, Bot. Calif., ed. 2, I., p. 425.

Actea palmata. Hook., Fl. Bor.-Am., I., p. 26 (excl. syn.)

Trautvetteria palmata, var. *occidentalis*. Gray, Proc. Am. Acad., VIII., p. 372. Watson, Bibl. Index, I., p. 27. Macoun, Cat., No. 72.

Actea grandis. Dietr. Syn., 3., p. 233.

Northwest coast of America.—*Menzies* in Herb. Hooker, Fl. Bor.-Am. Rich woods on the Lower Fraser River, British Columbia; a single specimen, 1872.—*Macoun* in Herb. Canad. Survey. On Mill Creek, Plumas County, California and in Oregon.—*Bot. Calif.*

Mr. Watson observes that the *T. palmata* of the Atlantic States (of which this has been hitherto mostly regarded as a variety) has more coriaceous strongly veined leaves, the cauline sessile, and the larger achenes (2 lines long or more) oblong-obovate, acute at base, and abruptly beaked by the short style; he also remarks that the Japanese form has a narrowly ovate achene, more attenuate upward into the straightish style.

GENUS VI.—RANUNCULUS, *Linnaeus*.

Bentham and Hooker, Genera Plantarum, I., p. 5.

Section I. BATRACHIUM, DC. Achenes transversely wrinkled. (Aquatic Herbs with capillaceous submerged leaves. Petals white, with yellow claw, and a pit near the base.

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| 1. <i>R. hederaceus</i> , var. <i>Lobbii</i> . | 4. <i>R. aquatilis</i> , var. <i>confervoides</i> . |
| 2. <i>R. hederaceus</i> , var. <i>hederæfolius</i> . | 5. <i>R. aquatilis</i> , var. <i>Drouetii</i> . |
| 3. <i>R. aquatilis</i> , var. <i>longistrostris</i> . | |

Section II. RANUNCULUS as restricted by some authors. Achenes not wrinkled. Mostly perennial terrestrial herbs with yellow (rarely white) petals having a small scale at the base.

Sub-section I. Aquatic, with capillaceous leaves and yellow petals.

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| 6. <i>R. multifidus</i> . | 8. <i>R. multifidus</i> , var. <i>γ. repens</i> . |
| 7. <i>R. multifidus</i> , var. <i>β. limosus</i> . | |

Sub-section 2. Terrestrial, with fibrous roots, divided leaves, and white (or purplish petals.)

9. *R. glacialis*.

Sub-section 3. Terrestrial, with fibrous roots, *undivided* leaves and yellow petals.

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| 10. <i>R. reptans</i> . | 13. <i>R. Cymbalaria</i> . |
| 11. <i>R. reptans</i> , <i>var. β. intermedius</i> . | 14. <i>R. Cymbalaria</i> , <i>var. alpinus</i> . |
| 12. <i>R. ambigens</i> . | |

Sub-section 4. Terrestrial, with fibrous roots, the leaves more or less *divided* or *cleft*, at least the upper ones, petals yellow.

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| 15. <i>R. abortivus</i> . | 28. <i>R. Pallasii</i> . |
| 16. <i>R. affinis</i> . | 29. <i>R. Hookeri</i> . |
| 17. <i>R. affinis</i> , <i>var. cardiophyllus</i> . | 30. <i>R. acris</i> . |
| 18. <i>R. affinis</i> , <i>var. leiocarpus</i> . | 31. <i>R. repens</i> . |
| 19. <i>R. ovalis</i> . | 32. <i>R. repens</i> , <i>var. hispidus</i> . |
| 20. <i>R. glaberrimus</i> . | 33. <i>R. occidentalis</i> . |
| 21. <i>R. sceleratus</i> . | 34. <i>R. Pennsylvanicus</i> . |
| 22. <i>R. Lapponicus</i> . | 35. <i>R. recurvatus</i> . |
| 23. <i>R. hyperboreus</i> . | 36. <i>R. Nelsoni</i> . |
| 24. <i>R. hyperboreus</i> , <i>var. pygmaeus</i> . | 37. <i>R. Nelsoni</i> , <i>var. tenellus</i> . |
| 25. <i>R. nivalis</i> . | 38. <i>R. fascicularis</i> . |
| 26. <i>R. nivalis</i> , <i>var. sulphureus</i> . | 39. <i>R. bulbosus</i> . |
| 27. <i>R. nivalis</i> , <i>var. Eschscholtzii</i> . | |

Sub-section 5. Terrestrial, root a fascicle of tubers, petals yellow (more than 5.)

40. *R. digitatus*.

1.—RANUNCULUS HEDERACEUS, *var. LOBBII*.

Receptacles glabrous. Stems elongated, floating, 6 to 12 inches long; submersed leaves none, or rudimentary, resembling adventitious shoots. Floating leaves 3 to 8 lines wide, deeply 3-lobed, truncate-cordate $\frac{1}{4}$ to $\frac{3}{8}$ in. wide, lobes equal, oval or oblong, the lateral ones usually with a broad notch at the apex. Peduncles opposite the leaves, thicker than the petioles, $\frac{1}{2}$ to $\frac{3}{4}$ in. long. Flower buds globose. Petals 2 or 3 times as long as the persistent sepals. Stamens about 6; achenes few, (about 4), turgid, glabrous. Receptacle rounded or flat, glabrous.

Ranunculus hydrocharis Lobbii. Hiern, *Batrachian Ranunculi*, Jour. Bot., IX, p. 65, t. 114.

R. hederaceus, *var.* Torrey in Report Exped. Whipple, (1857). Brewer & Watson, Bot. Calif. ed. 2, p. 5.

R. aquatilis, *var. Lobbii*. Watson, *Bibl. Index*, p. 17.

R. Lobbii. Gray, *Am. Jour. Sc.*, ser. 3, I, p. 476.

R. hederaceus. Macoun, Cat. No. 27.

In a pool by the roadside near Esquimault Harbour, Vancouver Island, 1875.—*Macoun*. Oregon.—*W. Lobb*, 1852, No. 249; and California, near 35th degree of lat., in 1853-4.—*Bigelow*, in *Herb. Kew.*, *fide* *Hiern*, l. c. Russian River.—*Bolander*, in Bot. Calif.

2.—RANUNCULUS HEDERACEUS, *var. HEDERÆFOLIUS*.

Differs from the preceding in growing on mud (not floating), the petals not, or scarcely, exceeding the calyx; leaves with 3 or 5 entire or sub-entire somewhat deltoid lobes, the middle one projecting. Leaves sometimes opposite.

Ranunculus hydrocharis hederifolius. Hiern, *Batr. Ranunc.*, Jour. Bot., IX, p. 67.

R. hederaceus. Biria, *Hist., Renonc.*, p. 38.

R. aquatilis, var. *arcticus*. Durand, *Kane Exp.*, II., p. 447.

R. hederaceo proximus. Giesecke, (Durand.)

Newfoundland and Rocky Mountains.—*Hiern*. The Rocky Mountain plant with larger flowers and more numerous stamens than in the type. Not rare in Europe. Disco and adjacent coast, 70°.—*Durand*.

3.—RANUNCULUS AQUATILIS, var. LONGIROSTRIS.

Aquatic. Receptacle hairy. Stem weak, arched, rooting copiously at the joints. Leaves all submerged, sessile, (not cuneate-flabelliform), segments capillary; stamens 12-15. Petals small, narrowly elliptic-ovate, faintly veined. Receptacle small, globose, hispid. Stamens 12-15. Carpels 8-10, inflated on the peripheral side, with prominent recurved or hooked beaks.

Ranunculus hydrocharis longirostris. Hiern, *Batr. Ranunc.*, Jour. Bot., IX, p. 100, (1871.)

R. longirostris, Godron, *Essai*, f. 9. (1839.)

R. aquatilis (var. *trichophyllus*?). Lawson, *Monogr. Ranunc. Canad.*, p. 42, (1869.)

In running water, creeks and ponds, Gananoque River and Rideau Canal, Ont.; Yarker, Ontario, 1861.—*Lawson*. Canada West.—*Drummond*, *Macoun*. New Mexico. Kentucky; Columbia; Missouri; California.—*Hiern*, who also refers to this form, but apparently with some hesitation, Dr. Lyall's specimens from Tobacco Plain, Kootenay, B. C.; Burke's from Rock River, Hudson Bay Territory; and Bourgeau's from Saskatchewan. Occurs exclusively in North America.—*Hiern*.

4.—RANUNCULUS AQUATILIS, var. CONFEROIDES.

Aquatic. Stem filiform. Leaves submersed and dissected, sessile, segments capillary, weak and collapsing (when taken out of the water). Peduncles equalling the leaves in length. Leaves, flowers and peduncles of small size. Stamens few (5-12). Carpels short-beaked. Receptacle nearly cylindrical, hairy.

Ranunculus hydrocharis confervoides. Hiern, *Batrach. Ranunc.*, Jour. Bot., IX, p. 102, (1871.)

R. confervoides. Fries, *Summa Veg. Scan.*, I., p. 139, (1846).

Batrachium confervoides. Fries, *Bot. Not. An.*, 1845, p. 121.

R. paucistamineus, var. *borealis*. Beurl, *Bot. Not.*, 1852, p. 156.

Lake Winnipeg.—*Douglas*. Washington Territory; North of Europe; Iceland.

5.—RANUNCULUS AQUATILIS, var. DROUETII.

Differs from the preceding var. (*confervoides*) in the fruit-receptacle being oblong (not cylindrical), the stem slender but scarcely filiform, and is probably not distinct, as Mr. Hiern indicates that in its Pacific and Cascade Mountain forms it approaches *confervoides*.

Ranunculus hydrocharis Drouetii. Hiern, *Batr. Ranunc.*, Jour. Bot., IX, p. 102.

R. Drouetii, F. Schultz.

Batrachium Drouetii. Nyman, Nya. Bot. Not. An. 1852, p. 98.

British Columbia (Wood); Lower Fraser River, Columbia (Dr. Lyall); Cascade Mountains, U.S. (Dr. Lyall); Aleutian Isles.—Hiern, l. c. Widely spread through Europe; also Asia, Africa, South America.

[Var. SUBMERSUS, with more numerous stamens, larger, with bigger flowers and more elongated submersed leaves, occurs at Boston, U.S., and is in all probability widely distributed.—Hiern.]

3.—*RANUNCULUS MULTIFIDUS*, Pursh.

Plant wholly or partially submersed, or creeping on wet mud. Stem rooting at the joints. Leaves orbicular in outline, all, or the lower submerged ones, dissected into numerous very narrow capillary, or broader linear segments or veins, the upper or emersed leaves flat, rounded or somewhat reniform, lobed or cleft into more or less angular lobes, but not dissected. Petals large, bright yellow.

Ranunculus multifidus. Pursh, Fl. Am., II., 736 (1815). DC. Syst. Nat., I., p. 270. Prod., I., p. 34. Gray, Manual, ed. 5, p. 40. Lawson, Ranunc. Canad., p. 41. Watson, Bibl. Index, I., p. 20. Macoun, Cat. No. 29. Not *R. multifidus*, Forsk. which is an Arabian plant (*R. Forsk.ii*, DC.).

R. fluviatilis. Bigelow, Fl. Bost., ed. 1, p. 139. Not of Willdenow (although so quoted by DC.).

R. lacustris. Beck & Tracy, in Eaton's Manual, ed. 3, p. 423, (1823.)

R. Purshii. Richardson, in App. Frankl. Jour., ed. 2, p. 23, (1823). Hook., Fl. Bor.-Am., p. 15, t. 7. Torr. & Gr. Fl., I., p. 19. Hook. f., Arct. Pl., p. 283. Chapman, Fl. S. U.S., p. 8. Wood, Cl. Bk. & Fl., p. 206. Rothr., Fl. Alask., p. 442.

R. delphinifolius. Torrey, Eat. Man., ed. 4, p. 424.

R. amphibius. James, Cat., 185.

R. Beckii. Don, Mill. Diet., I., p. 39.

R. fluitans. Provancher, Fl. Canadienne, p. 10, not of Lamarck.

R. radicans, var. *multifidus*. Regel, Fl. Ost.-Sib., I., p. 45.

Common throughout the eastern and prairie districts, from Canada to near the Arctic Sea; never observed floating in deep water, but sometimes spreading over the surfaces of sphagnum bogs, more generally creeping on mud in very sheltered pools of water in shady places; lakes and marshes about Slave Lake, Cumberland House Fort.—Richardson. And to the Rocky Mountains.—Drummond. Extending to near the Arctic Sea.—Hooker.

In ditches and muddy pools, not rare in Ontario. Sloate Lake, Sydenham, 7th June, 1859; near Yarker, 11th July, 1861; marsh between Forfar and Newboro', on the Rideau, 4th July, 1862.—Lawson. Creek in Gladford, 25th May, 1860.—Logie. Conway Creek, Prescott.—B. Billings jr. Malden, abundant.—Dr. P. W. MacLagan. Very abundant in ponds around Belleville, Ont.; Cape Breton.—Macoun. Windsor, Nova Scotia.—Howe. Kotzebue Sound.—Rothrock.

7.—*RANUNCULUS MULTIFIDUS*, var. *β. LIMOSUS*.

Creeping, partially submersed, all the leaves more or less reniform in outline, lower ones dissected, the ultimate segments linear, upper ones palmately divided into angular segments.

R. Purshii α. Richardson, Frankl. Jour., ed. 2, App., p. 23.

R. Purshii var. γ. Hook., Fl. Bor.-Am., I., p. 15, t. 7, B., fig. 2. Torr. & Gr., Fl., I., p. 20.

R. limosus. Nuttall, in T. & G. Fl., I., p. 20.

R. radicans, β. *repens*. Regel, Fl. Ost.-Siber., I., p. 45.

R. multifidus, var. β. Watson, Bibl. Index, I., p. 20.

Slave Lake, Cumberland House Fort, and Rocky Mountains.—*Drummond* in Hook., Fl., I. c. Touchwood Hills, N. W. Territory, and in pools near Stuart Lake, British Columbia.—*Macoun*.

8.—*RANUNCULUS MULTIFIDUS*, var. *γ. REPENS*, *Watson*.

Creeping on mud, all the leaves roundish reniform, palmately divided into three or five segments.

R. multifidus γ. *repens*. Watson, King's Rep., V., p. 8. Bibl. Index, I., p. 20.

R. Purshii β. Richardson, l. c.

R. Purshii, var. δ. Hook., Fl. Bor.-Am., p. 15, tab. 7. B., fig. 3. Torr. & Gr., Fl. N. Am., I., p. 20.

R. radicans. C. A. Meyer, in Ledebour's Fl. Altaica, II., p. 316.

R. radicans, α. *typicus*. Regel, Fl. Ost.-Siber., I., p. 44.

R. Purshii β. *terrestris* (*subglaber*). Ledebour, Fl. Rossica, I., p. 35.

R. Gmelini. Flora Sibirica, IV., t. 83, b.

Bear Lake.—*Richardson*. Bay of Eschscholtz, on the western shore of extreme Arctic America.—*Chamisso*. Near Flinton, Hastings Co., Ont., and on the great prairies.—*Macoun*. Swamps, Foot Hills of Rocky Mountains.—*Dr. G. M. Dawson*.

9.—*RANUNCULUS GLACIALIS*, *Linnaeus*.

Plant 3-8 inches long, stem about 1-flowered. Radical leaves petiolate, palmately 3-parted or 3-cleft, the lobes trifid, lobules thick, and somewhat obtuse. Cauline leaves or bracts few and sessile. Calyx covered with brownish silky hairs. Petals roundish, emarginate at the apex, as long as the sepals, white with a purplish tinge. Achenes compressed, margined.

Ranunculus glacialis. Linn. Sp. Pl., p. 777. Birtia, Hist. Renoncul., p. 34. DC. Prod., I., p. 30. Torr. & Gr., Fl. I., pp. 16 and 358. Hook. f., Arct. Pl., pp. 283 and 311. DuRoi, Pl. Kane II., p. 448. Watson, Bibl. Index, I., p. 19. Macoun, Cat., No. 44 b.

R. Chamissonis. Schlechtend. Animad., I., p. 12, t. 1.

Found in East Greenland by the earliest and by all subsequent voyagers, but never on the Baffin Bay side till Kane's expedition, when it was brought from North Proven, lat. 72° N.—*Hook. fil.* Fury Beach, Elwyn Inlet, Gulf of Boothia.—*Capt. A. H. Markham*. Iceland.—*Lindsay*. Lapland, Swiss Alps, Pyrenees, Austria, Hungary.

10.—*RANUNCULUS REPTANS*, *Linnaeus*.

Stem slender, arched-procumbent, and rooting at the joints. Leaves linear, acute, somewhat fleshy, glabrous, entire. Flowers solitary, terminal or at the joints, the flower small, sepals spreading, obtuse. Petals small, obovate, yellow. Achenia smooth, with a minute point.

Ranunculus reptans. Linn. Sp. Pl., p. 773. Fl. Dan., t. 108. Ait. f., Hort. Kew., ed. 2, III, p. 351. Torr. & Gr., Fl. I, p. 16. Gray, Man., ed. 1, p. 9. DC. Syst., I, p. 248. Lightf., Fl. Scotica, fig. on title page. Withering. Arr. Br. Plts., II, p. 505. Lawson, Ranunc. Canad. p. 40. Wood, Cl. Bk. & Fl. p. 206.

R. filiformis. Michaux, Fl., B. A., I, p. 320. Persoon, Synops., II, p. 102. Pursh, Fl., II, p. 392.

R. reptans, var. *β. filiformis*. DC. Syst. Nat., I, p. 248.

R. Flammula, var. *γ. filiformis*. Hook., Fl. B. A., I, p. 11.

R. Flammula, var. *reptans*. Smith, Eng. Fl., III, p. 45, (1825). Meyer, Pl., Lab., p. 96. Gray, Man., ed. 5, p. 41. Wats. Bibl. Index, I, p. 18. Brewer & Wats., Bot. Calif., I, p. 6.

R. Flammula, sub-sp. *reptans*. Hook. f., Student's Flora, p. 6.

Islands in the St. Lawrence River, near Brockville and elsewhere on the northern shores of the Upper St. Lawrence and Lake Ontario.—*Lawson*. N. to lat. 69°.—*Richardson*. Nicolet, Montreal, Wolfe Island.—*Dr. P. W. MacLagan*. Dried up ponds near Fort Wellington, Prescott, and banks of St. Lawrence River, west from Brockville.—*B. Billings jr.* Lake Winnipeg and Athabaska River, 31st July, 1862.—*McTavish*. Gravelly banks of lakes and rivers, Nova Scotia and Coast Ranges of British Columbia; Lake Winnipeg; sparingly amongst sand, east side of River Trent, below Heeley's Falls, Seymour, Ont.—*Macoun*. Lake St. Charles.—*Provancher*. Labrador, Newfoundland, Iceland and Greenland.

This form is well known in northern Europe, and extends to Kamtschatka, but is not very common. Our Canadian plant agrees perfectly with Scotch specimens (from Loch Leven) and Norwegian ones collected on the Dovrefeldt, 3,500 feet. Large specimens from Braemar, Scotland, have narrowly lanceolate leaves, apparently connecting this with *Flammula*. In Canada it appears to be permanently distinct.

11.—*RANUNCULUS REPTANS*, var. *β. INTERMEDIUS*.

Leaves narrowly lanceolate, the upper ones linear, entire.

R. Flammula, var. *intermedia*. Hook., Fl. Bor.-Am., I, p. 11. Gray, Man., ed. 5, p. 41.

R. Flammula. Schlechtendal, in Linnaea, VI., p. 577.

Shore of Lake Ontario at Presqu'île Point, and on Toronto Island.—*Macoun*. South Greenland.—*Hook. f.*, Arct. Pl.

12.—*RANUNCULUS AMBIGENS*, *Watson*.

Stem more or less erect from a reclining base, with adventitious roots from the lower joints. Leaves ovate-lanceolate or linear-lanceolate, narrowed at the base into short sheathing petioles, usually glabrous and entire or slightly toothed. Carpels small, with a subulate beak. Petals much longer than the calyx.

Ranunculus ambigens. Watson, Bibl. Index, I., p. 16.

R. Flammula. Pursh, Fl. N. Am., I., p. 391. Torr. & Gr., Fl. N. Am., I., p. 16. Gray, Manual, ed. 1, p. 8. Lawson, Ranunc. Canad., p. 40. Wood, Cl. Bk. & Fl., p. 206.

R. Lingua. Pursh, Fl., p. 391?

R. alismifolius. Gray, Man., ed. 2, p. 8; ed. 5, p. 41. Chapman, Fl. S. U.S., p. 7. Macoun, Cat. No. 30.

Southern Canada.—*Goldie*. Wet fields and on the common at College street, Kingston, Ont.—*Lawson*. Near Victoria, Vancouver Island.—*Macoun*, in Herb. Canad. Survey. Vicinity of Port Colborne, Ont., McGill College Herb.—*Macoun*.

13.—RANUNCULUS CYMBALARIA, Pursh.

Humble, creeping, main stock throwing off runners, which root and become leafy at the joints, forming new plants. Leaves long-stalked, orbicular, somewhat cordate, crenately notched or almost lobed. Flowers several, on a leafless stalk a few inches high, with one or two distant bracts. Carpels very numerous, with short beaks, forming an oblong or round head.

Ranunculus Cymbalaria. Pursh, Fl. Am., II., p. 392. DC. Syst. Nat., I., p. 252. Prod., I., p. 33. Hook., Fl. Bor.-Am., I., p. 11. Torr. & Gr., Fl. N. Am., I., p. 17. Torrey, Fl. N. Y., I., p. 12. Gray, Pl. Wright., II., p. 8. Manual, ed. 5, p. 41. Provancher, Fl. Canad., p. 9. Hook. f. & Thomson, Fl. Indica, I., p. 31. Walpers, Ann., IV., p. 18. Hook. f., Arct. Pl., p. 283. Lawson, Ranunc. Canad., p. 40. Watson, Bibl. Index, I., p. 18. Macoun, Cat. No. 32. Hance, Lond. Jour. Bot., XXI., p. 296. Brewer & Watson, Bot. Calif., ed. 2, I., p. 7. Regel, Fl. Ost.-Sibir., I., p. 42.

A number of forms occur in Northern Europe and Asia and on the Rocky Mountains, whose relations to *R. Cymbalaria* appear to be still imperfectly understood, and I have therefore refrained from quoting synonyms which it has been customary to refer here. *R. salsuginosus* of Pallas was regarded by the elder Hooker as identical with this species, but not De Caudolle's plant of the same name. In the Flora Indica, Hooker and Thomson now identify with it De Caudolle's plant also. *R. salsuginosus* of Wallich is referred to *R. pulchellus*, C. A. Meyer, and *R. salsuginosus*, Don, in Royle Ill., to *R. lobatus*, Jacquem. On the other hand, I infer from remarks in Plantæ Fendlerianæ, that Gray regarded *R. Cymbalaria*, Pursh, *R. tridentatus*, HBK., and *R. salsuginosus*, Pallas, as three well-marked species. And yet, in the Bibliographical Index, Watson, who may be regarded as representing Cambridge views, quotes, as synonyms of *R. Cymbalaria*,—*tridentatus*, HBK., *salsuginosus*, Pallas, *sarmentosus*, Adams, and *halophilus*, Schlechtendal, to which Hook. & Th. add *plantaginifolius*, Murray.

Gaspé, at the mouth of the Dartmouth River, in situations nearly as low as Gaspé Bay, July 15, leaves sometimes floating.—*Dr. J. Bell*. Windsor, N.S.—*Prof. Liow*. Anticosti, July 5, 1861.—*Verrill*. Hudson Bay Country, *McTavish*.—York Factory; also Slave Lake—25th July.—*McTavish*. Lake Winnipeg.—*Barnston*. Fredericton.—*Dr. Robb*. New Brunswick, Gulf shore.—*Rev. J. Fowler*. Bay of Fundy.—*Matthews*. St. Joachim, Rimouski.—*Provancher*. Musquodoboit River, Halifax County, 25th June, 1878.—*Dr. W. H. Lindsay*.

Bedford Basin.—*Lawson*. Lake Winnipeg.—*R. King*, in Back's Expedition. Common in moist shady places, from Canada to near the Arctic Sea, lat. 68°, and from Hudson Bay to the summits of the Rocky Mountains.—*Richardson*, *Goldie*, *Douglas*, *Drummond*, *Morrison*.—Hook., Fl. Bor.-Am. Beauharnois and Montreal, P.Q., McGill College Herb.—*Macoun*. On mud flats along the Ottawa at Thurso, P.Q.—*Fletcher*. Along the Ottawa River at Beauharnois, P.Q. From Hudson Bay to near the Arctic Sea, in lat. 63°.—*Richardson*. New Brunswick.—*Fowler*. Sea shores and margins of salt ponds in the prairie region and interior of British Columbia; Gaspé, P.Q.; Fort William, Lake Superior.—*Macoun*. Pacific coast.—*Dr. G. M. Dawson*.

South Greenland. *Hook.*, Arct. Pl.

First detected by Pursh near the salt works of Onondaga, New York State. It grows at Long Island and Salem, Mass. Gray gives its distribution in the Eastern United States thus:—"Sandy shores from New Jersey northward, and along the great lakes to Illinois and westward; also at salt springs." Salt plains of the Platte.—*James*. Banks of the Oregon and neighbouring streams, as well as on the contiguous coast of the Pacific.—*Nuttall*. Turkestan, May, 1881.—*Mesny*, (Hance.)

14.—*RANUNCULUS CYMBALARIA* var. *β. ALPINUS*, *Hooker*.

Smaller, leaves elliptical or oblong, 3-toothed at the apex, achenia broader and shorter, in a globose head.—*R. halophilus*. Schlecht. *R. Cymbalaria*, *β. alpinus*. Hook., Fl. B.-A.

Near the summit of the Rocky Mountains, between lat. 52° and 55°.—*Drummond*, *Macoun*. Salt lake, Anticosti, August 11, 1883.—*Macoun*, in Herb. Canad. Survey. Occurs also in Kamtschatka (Flora Ost-Sibirien.)

15.—*RANUNCULUS ABORTIVUS*, *Linnaeus*.

Radical leaves petiolate, roundish or kidney-shaped, more or less crenate, smooth and shining, those of the stem very shortly stalked or sessile, and divided or parted into oblong, cuneate or broadly linear divisions. Petals shorter than the sepals. Carpels in globose heads, inflated, with small curved beaks.

Ranunculus abortivus. Linn. Sp. Pl., p. 776. Willd., Sp. Pl., II, p. 1314. Pursh, Fl., II, p. 392. DC. Syst. Nat., I, p. 268. Prod. I, p. 34. Hook., Fl. Bor.-Am., I, p. 14, in part. Torr. & Gr., Fl. N. Am., I, p. 19. Torrey, Fl. N.Y., I, p. 13. Gray, Manual, ed. 5, p. 42. Chapman, Fl. S. U.S., p. 7. Wood, Cl. Bk. & Fl., p. 206. Lawson, Ranunc. Canad., p. 37. Watson, Bibl. Index, I, p. 15. Macoun, Cat. No. 37.

R. turicomus var. *Biria*, Hist. Renonc., 39.

Abundant about the City of Kingston, Ont., and surrounding country, in pastures and woods; Indian Island, Bay of Quinté, 5th June, 1862; Sloate Lake, Sydenham, 7th June, 1859; Kingston Mills, 24th May, 1859; grounds of Rideau Hall, Ottawa, 24th May, 1884.—*Lawson*. Portland, July, 1860.—*Dr. Dupuis*. Fort Garry, July 1861.—*Dr. Schultz*, sp. No. 180. Nicolet, Montreal, Kingston and Malden.—*Dr. P. W. MacLagan*. Belleville, abundant in low wet places; Peace River; British Columbia.—*Macoun*. Common in Caledon.—*Cameron*. Roadside, Hamilton.—*Logie*. Lake Winnipeg.—*Barnston*. Lac St.

Jean, also St. Joachim.—*Provancher*. Belœil.—*Dr. J. Bell*. Bass River, Kent, N. B.—*Fowler*. Prescott district, common.—*B. Billings jr.* Osnabruck and Prescott Junction, 20th May, 1859.—*Epstein*. Gaspé, Douglastown and North Fork of Dartmouth River, June 18, 1862.—*Dr. J. Bell*. Anticosti, June 25, 1861; Newfoundland.—*Verrill*. Hudson Bay Territories.—*McTavish*. Pictou, N.S.—*A. H. McKay*. Canada; and to lat. 57°; central limestone and prairie districts, and eastern declivities of the Rocky Mountains.—*Richardson*, *Drummond*, *Mrs. Percival*, *Todd*. Newfoundland.—*Cormack*, (Hooker.)

In open exposed situations the stem is short and stout, the leaves are thick with short petioles, and the plant rises to a height of from 3 to 7 or 8 inches; in woods and shaded situations the whole plant is more delicate, the stem elongated and lax, the leaves thin and of a paler bright green, with longer petioles, the radical ones few in number, and the slender stem rises to a height of from 12 to 18 inches. Although described by Gray (in Manual) as "glabrous and very smooth," this species is usually slightly hairy, or has at least hair points. I have not seen the var. *micranthus*, which is described as *pubescent*.

16.—*RANUNCULUS AFFINIS*, *R. Brown*.

Radical leaves long-petioled, more or less cuneate at the base, pedately divided or lobed, cauline ones sub-sessile, digitate, being divided to the base into long narrow linear segments. Stem erect, 1, 2, or several-flowered, and, with the calyx, more or less pubescent, fruit an oblong-cylindrical head of achenes with recurved beaks. Plant usually more or less pubescent, especially on the pedicels and calyx. Carpels usually but not always hairy.

Ranunculus affinis. *R. Brown* in Parry's 1st Voy., App., p. 265. *Richardson*, in Frankl. Jour., ed. 2, p. 23. *Hook.*, in Parry's 3d Voy., App., p. 384. Fl. Bor.-Am., p. 12, t. 6 f. A. *Graham*, in Edin. Phil. Jour., 1829, p. 187. *Torr. & Gr.*, Fl. N. Am., I., p. 18. *Gray*, Pl. Fendl., p. 4. *Pl. Wright*, II., p. 8. *Watson*, Bibl. Index, p. 15. *Macoun*, Cat., No. 34.

R. arcticus. *Richardson*, in Frankl. 1st Jour., ed. 1., App., p. 741.

R. auricomus. *Hooker*, Back's Exped., 1836, p. 523. *Hook. f.*, Distr. Arct. Pts., pp. 283 and 312. Not *auricomus* of Linn. and European botanists.

R. auricomus, var. *affinis*. *Lawson*, Ranunc. Canad., p. 37.

The following references in Watson's Index appear to be somewhat doubtful or obscure:—*R. pedatifidus*, Schlechtendal. *R. amœnus*, Ledebour. *R. cœspitosus*, Wallich.

Cape Mulgrave, in N. W. America.—*Lay & Collie*. (Beechey.) Melville Islands.—*Parry*. Shores of the Arctic Sea, between long. 107° and 159°.—*Richardson*, *Franklin*, *Back*, *Drummond*, (Hooker.) Churchill. 3rd July, 1853, a small specimen.—*McTavish*. Kotzebue Sound.—*Hooker*. Lake Winnipeg.—*Barnston*. Slave Lake, Thlew-ee-choh and Athabasca.—*King*, (Back's Exped., 1833-4.) Abundant west of Moose Mountain, N. W. T.; *Quesnel*, British Columbia.—*Macoun*. Lake of the Woods and Traders Road, north of Woody Mountain, N. W. T.—*Dr. G. M. Dawson*. Disco; east shore of Baffin Bay (west coast of Greenland), 69° 15'. Extreme north and south limits observed on the West Shore (Grinnell Land): 82° 27': 81° 42'.—*Hart*, Brit. Pol. Exped., 1876. Swift Rudder Bay and Fløberg Beach.—*Dr. Moss*, (Hart.) East Greenland, "north coast."—*Buchanan*. Cumberland Gulf, Davis Strait.—*Taylor*.

The plant having been much confounded with the *R. auricomus* of Europe, it is difficult to trace its distribution. In some of its forms it runs down the mountains into New Mexico, as appears from Parry and Fendler's collections. I have gathered it on the mesa around the Colorado peaks.

R. auricomus of Europe has three distinct sets of leaves, viz.: 1. Radical leaves, which are long petioled, reniform, three-lobed or -partite. 2. Lower cauline leaves, which are shortly petioled, pedately divided into broad lobes. 3. Upper cauline leaves, which are sessile and embracing, digitately divided into slender linear lobes. The whole plant is nearly glabrous, of a vivid green colour like the sylvestral form of *R. abortivus*, the calyx is only slightly hairy, and the achenes are in a globose head. It grows in warm sheltered woods, never in exposed situations, and does not extend far north, nor to very great elevations. *R. affinis*, on the contrary, is conspicuously arctic and alpine in its range.

17.—*RANUNCULUS AFFINIS*, var. *CARDIOPHYLLUS*, Gray.

Robust and roughly hairy; radical leaves rounded-cordate with the base rather deeply emarginate, undivided or many-cleft, crenate; cauline ones palmately cleft into linear incisely crenate lobes; sepals spreading, half the length of the petals; head of achenes oblong.

Ranunculus affinis, var. *cardiophyllus*, Gray, Proc. Am. Acad., 1863, p. 56. Wats., Index, —, p. 16. Macoun, Cat. under No. 34.

R. cardiophyllus. Hook., Fl. Bor.-Am. I, p. 14, t. 5. Bot. Mag., t. 2999. Torr. & Gr., Fl., I, p. 18.

In the central prairie and limestone districts.—*Richardson, Drummond*. Alpine prairies in the Rocky Mountains.—*Drummond*, (Hooker.) Vicinity of Morley, Bow River, seven miles north-west of Edmonton.—*Macoun*.

18.—*RANUNCULUS AFFINIS*, var. *LEIOCARPUS*, Trautvetter.

Radical leaves divided, the lobes oblong-lanceolate or linear-lanceolate, entire or incisely dentate. Stem leafy.

Ranunculus affinis, var. *leiocarpus*. Trautvetter, in Pl. Schrenk., p. 71. Regel, Fl. Ostsib., I, p. 45. Watson, Index, p. 16. Macoun, Cat., under No. 34.

R. pedatifidus, of Sm., DC., Ledeb., Trautv. & Meyer, and Turcz., according to Regel, Fl. Ostsibir., I, p. 46.

Top of Mount Albert 4,000 ft.; Shickshock Mountains, Gaspé.—*Macoun*, in Herb. Canad. Survey. Table Top Mountain, Gaspé, July 30, 1883.—*Porter*, in Herb. Canad. Survey.

19.—*RANUNCULUS OVALIS*, Rafinesque.

Stem very short, rising from 5 or 6 inches in flower and fruit. Leaves mostly radical, ovate or obovate, more or less rhombic or sagittate, long petioled, toothed, those on the stem nearly sessile, lobed or parted, the upper ones into linear segments. Flowers large.

Carpels globose, with very minute beaks, in round heads. Whole plant pale green, with soft hairs.

Ranunculus ovalis. Rafinesque-Schmaltz, Jour. Bot., II., p. 268. (1814.) DC. Syst. Nat., I., p. 302. (1818.) Prodromus, I., p. 43. Graham, Edin. Phil. Jour., 1829, p. 188. Poiret, Supp., V., p. 778. Don, Mill. Dict., I., p. 33. Hook., Fl. Bor.-Am., I., p. 12, t. 6., f. B. Torr. & Gr., Fl. N. Am., I., p. 18. Walpers, Rep., I., p. 42. Dietr. Syn. III., p. 318.

R. rhomboideus. Goldie, in Edin. Phil. Jour., VI., p. 329, t. 11, f. 1. (1822.) Richardson, in Frankl. Jour., p. 13. Hook., Fl. Bor.-Am., I., p. 12. Torr. & Gr., I, Fl. N. Am., I., p. 18. Gray, Man., ed. 5, p. 42. Lawson, Ranunc. Canad., p. 36. Macoun, Cat., No. 33.

R. brevicaulis. Hook., Fl. Bor.-Am., I., p. 13, t. 7, f. A. (1833.) Lond. Jour. Bot., 1st Series, VI., p. 66. Torr. & Gr., Fl., I., p. 18.

Lake Simcoe, Ont.—*Goldie*.—in the central limestone and prairie districts from Canada to lat. 57°. Common in the western parts of Canada (Ontario).—*Richardson*.

Alpine prairies among the Rocky Mountains, and about Carlton House, lat. 52° and 55° (*R. ovalis*).—*Drummond*, in Hook., Fl. B.-A. Shores of Lake Huron (*R. brevicaulis*).—*Richardson*, *Drummond*, in Hook., Fl. B.-A. Sandhills on the banks of the Humber, near Toronto, Ont., 4th June, 1862, plentiful.—*Lawson*. Sandy plains near Castleton; also at Murray Town hall.—*Macoun*. Lake Winnipeg.—*Barnston*. Near Montreal.—*Dr. Holmes*. Sand hills near Trenton and Rice Lake Plains, Ont.; Lake of the Woods, and on the western plains.—*Macoun*. Near London, Ont.—*Saunders*. Sandy plains of the Riviere aux Sables, Lambton Co., Ont.—*Gibson*. Red River Prairie and Pembina Mountain.—*Dr. G. M. Dawson*, (Macoun).

20.—RANUNCULUS GLABERRIMUS, *Hooker*.

Plant succulent and glabrous. Stem 4 to 7 inches high. Root a fascicle of long fleshy fibres. Leaves broadly oval-oblong, cuneate at the base, or more or less elliptical, entire or bluntly toothed at the apex, the upper bracteal ones cleft into 3 linear lobes. Sepals oval, not reflexed, half the length of the petals. Petals oval, yellow, 3 to 4 lines long. Achenes turgid, smooth, with a short curved beak, in globular heads.

Ranunculus glaberrimus. Hook., Fl. Bor.-Am., I, p. 12, t. 5, f. A. Torr. & Gr., Fl. N. Am., I, pp. 19 and 658. Brewer & Watson, Bot. Calif. ed. 2, I, p. 7. Watson, Bibl. Index, I, p. 19. Macoun, Cat. No. 35.

Common on the mountains around the Kettle Falls (of the Columbia), and on the Rocky Mountains, near the limits of perpetual snow.—*Douglas*, in Hook., Fl. B.-A. Near Lake La Hache, and above Boston Bar, B. C., 27th July, 1875.—*Macoun*, in Herb. Canad. Survey. Wallawallah River, &c.—*Nuttall*. In the Snake country, along Snake or Lewis River.—*Tolmie*. Washoe Mountains (*Anderson*) and northward in sub-alpine situations to Oregon and Idaho.—*Bot. Calif.*

21.—RANUNCULUS SCELERATUS, *Linneus*.

Root fibrous. Stem thick and hollow (1 foot high). Leaves somewhat fleshy, smooth and glossy, the radical and lower cauline ones stalked, three-lobed or three-parted, rounded, the segments blunt, crenate, upper leaves sessile, trifid, the lobes linear, entire

or incise-dentate. Sepals reflexed. Petals scarcely longer than the sepals. Carpels slightly wrinkled. Juice acrid. Annual or biennial. Celery-leaved Crowfoot.

Ranunculus sceleratus. Linn. Sp. Pl., p. 776. Fl. Dan., t. 371. Engl. Bot., t. 681. Bria, Renonc., 41. Willd., Sp. Pl., II., p. 1315. Schlecht., Animad. Ranunc. II., p. 10. Hook., Fl. Scot., p. 174. Wither., Arr. Br. Pts., II., p. 505. Elliot, S. Carol., II., p. 59. Lightfoot, Fl. Scot., ed. 2, I., p. 291. Pursh, Fl. Am., II., p. 393. DC. Syst. Nat., I., p. 268. Prod., I., p. 34. Smith, Eng. Fl., III., p. 48. Richardson, in Franklin's Jour., p. 14. Hook., Fl. Bor.-Am., I., p. 15. Torr. & Gr., Fl. N. Am., I., p. 19. Torrey, Fl. N. Y., I., p. 13. Chapman, Fl. S. U.S., p. 8. Hook. f., Arct. Pl., p. 283. Student's Fl. Brit., p. 7. Gray, Man., ed. 5, p. 42. Lawson, Ranunc. Canad., p. 38. Watson, Bibl. Index, I., p. 24. Macoun, Cat., No. 38.

Herba scelerata. Apuleius, (Paris, 1528). Mentzelius, Index Multiling., p. 257, (1682).

Herba Sardo. Guilandinus, (Padua, 1558).

Apium aquaticum. Tragus, (Strasburg, 1552).

Ranunc. palustris apiifolio levis. C. Bauhin, (1671).

Apium risus (apio riso, Ital.) J. Bauhin, (1650).

Flooded gravelly banks of rivers from Canada to lat. 67°.—*Richardson, Douglas, Drummond*. Sides of ditches and wet places, Cataraqui Creek and other bays along the shore of Lake Ontario, and along the course of streams running into that Lake.—*Lawson*. St. Catherines and Malden.—*Dr. P. W. MacLagan*. Belœil Mountain.—*Dr. John Bell*. Ditches around Belleville, common; Gaspé; Point Levis, P. Q.—*Macoun*. Rainy Lake and Slave Lake.—*Capt. Buck*. Lake Winnipeg.—*Barnston*. York Factory.—*McTavish*. Common about Hamilton.—*Logie*. Montreal.—*Herb. McGill Coll.* Great plains by Peace River to British Columbia.—*Macoun*. St. Stephen, Shediac and River Charles, N.B.—*Fowler*.

Sir Joseph Hooker gives the distribution of this species as: "Europe (Arctic), N. Asia, N. India to Bengal; introduced in America, &c." There appears, however, to be no good reason to doubt its being indigenous in America, where it is widely spread throughout British America and the United States, from the Atlantic to the Pacific, both in coast districts and on the plains of the interior, from lat. 67° in the north, south to S. Carolina and the Platte River.

The English vernacular name of this plant has not been followed by American authors. It is given as the "Celery-leaved Crowfoot" in the following English works:—Withering's Arrangement of British Plants, Lightfoot's Flora Scotica, Smith's English Flora, Hooker's British Flora, Hull's British Flora, Hooker and Arnott's British Flora, Babington's Manual of British Botany, and no doubt in many other books. The Society of Botanists at Litchfield, in 1782, undertook to give an exact literal rendering in English of the Latin "*Systema Vegetabilium*" of Linnæus, in which they had the assistance of a large number of eminent authorities, including Dr. Samuel Johnson. In this work, instead of giving the vernacular English names of the plants, the method was adopted generally of substituting for them English words as nearly equivalent as possible to the Latin Linnæan "trivial," or specific names. *Ranunculus sceleratus* thus became the "*Baneiful Ranunculus*." London, who in his publications took great pains to popularizing Natural History, by the use of English names, rendered it the "*Hurtful Crowfoot*." Gray, probably thinking that his predecessors had not hit upon the true rendering of "*sceleratus*," called our plant, with American frankness, the "*Cursed Crowfoot*." He is followed by

Abbé Provancher, who, in "Flore Canadienne," repeats: "Renoncule scélérate, Cursed Crow-foot." Macoun evidently thought the epithets had waxed strong enough for a plant that was not known to have done harm, for in his Catalogue we find it standing simply as the "Noxious Buttercup." Probably the true English rendering of the name would be the "Blistering" or "Biting" Buttercup, or Crowfoot, as the "*Herba scelerata*" no doubt originally obtained that ancient name on account of its supremely acrid taste and blistering properties. Hudson (Fl. Angl.) quotes "*Ranunculus palustris Herba*" as an article of pharmacy. Pennant, in 1772, (Tour in Scotland, II., p. 43) wrote that the Water Ranunculus is used instead of Cantharides to raise blisters. Lightfoot (l. c.) says: "The whole plant has a most acrimonious quality; if bruised and laid upon any part of the body it will in a few hours raise a blister. Strolling beggars have been known sometimes purposely to make sores with it, in order the more readily to move compassion." Other early Floras and Herbals give similar testimony. The word, *sceleratus*, is used in the sense of "sharp," "hot," "acrid" to the taste. Plautus has "teritur sinapis scelerata,"—the ——— mustard is being ground. Also in the sense of "noxious," "deadly," by Pliny: "*sceleratissimi serpentium*,"—the *deadliest* serpents. It is doubtful whether the formation of so-called English names for plants by translation of their botanical names is of any real benefit. It is otherwise with vernacular names in actual use by the people of the countries in which the plants grow; these are of real importance, not in a botanical point of view only, but in relation to language, history and anthropology. In the case of the present plant, we have a good well-used English name in the "Celery-leaved Crowfoot," which may very well displace all others. Rousseau defended Linnaeus for using Latin words not in Cicero's works, by saying that they might have been had Cicero written a system of botany. So Dr. Johnson and the other Litchfield authorities might have been careful to preserve the vernacular plant-names if they had been compiling an English Dictionary instead of aiming at a literal translation of a concise Latin book.

22.—RANUNCULUS LAPPONICUS, *Linnaeus*.

Leaves glabrous, the radical ones few, long-petioled, tripartite, the lobes dilated, obtuse, coarsely-toothed; scape 1-flowered, usually naked, longer than the leaves; calyx of 3 reflected sepals.

Ranunculus Laponicus. Linn. Sp. Pl., p. 778. Smith, in Fl. Laponica, ed. 2. p. 194, t. 3, f. 4. DC. Syst. Nat. I., p. 271. Prod., I., p. 35. Hook., Parry's 3rd Voy. App., p. 121. Fl. Bor.-Am., I., p. 16. Hook. & Arn., Bot. Beechey, p. 121. Fl. Dan., t. 2292. Persoon, Synops., II., p. 104, No. 42.

Mossy woods in the eastern and central districts, and from lat. 50° to the Arctic Sea. Mountain swamps, eastern declivity of the Rocky Mountains, lat. 52° to 57°.—*Drummond*. Whale Islands in the Arctic Sea.—*Lieut. Ross*. A rare plant, being very alpine or very Arctic.—*Hooker*. Mossy swamps along the base of the Porcupine Mountains, Manitoba; swamp near St. Albert at Edmonton, N. W. T.; swamps along Little Stone Lake, N. W. T.; and in numerous swamps in northern British Columbia.—*Macoun*. Kotzebue Sound.—*Pothrock*. Prince Arthur's Landing, Thunder Bay.—*Rev. J. K. McMorine*, (Macoun.) Near McLeod Lake, British Columbia, 22nd June, 1875.—*Macoun*, in Herb. Canad. Survey. East shore of Baffin Bay (west coast of Greenland),—extreme north and south

limits observed: 72° 20': 69° 15'.—*Hart*, Brit. Polar Expd., 1875-6. Jacobshavn, Disco Bay, Greenland, 1867.—*Brown*. Iceland, 1860.—*Dr. W. L. Lindsay*. This species inhabits all Sir Joseph Hooker's five Arctic Areas, but does not attain the highest latitudes.

23.—*RANUNCULUS HYPERBOREUS*, *Rottböll*.

Stem filiform, creeping. Leaves petioled, trifid; lobes oblong-oval, divaricate, the lateral ones somewhat 2-cleft, the middle one entire, the short petioles sheathing at the base, the sheaths auricled by two stipule-like dilatations. Petals 1-flowered, flower small, sepals reflexed, petals yellow, shorter than the sepals. Heads of achenes globose, or ovate. Plant glabrous or somewhat pubescent.

Ranunculus hyperboreus. Rottböll, Act. Hafniæ, X., p. 458, t. 4, fig. 16. (1770.) Fl. Danica, t. 331. (Trimen, Jour. Bot., XVIII., p. 278.) Retzius, Prod. Fl. Scand., n. 691. DC. Syst. Nat., I., p. 272. Prod., I., p. 35. Brown, Parry's 1st Voy., p. 243. Hook, Parry's 2nd Voy., App., p. 4; 3rd Voy., App., p. 29. Fl. Bor.-Am., I., p. 16. Torr. & Gr., Fl. N. Am., I., p. 20. Hook. f. & Thoms., Fl. Indica, I., p. 32. Walp. Ann., IV., p. 19. Hook. f., Arct. Pl., pp. 283 and 312.

R. Ammani. Gunner, Fl. Norvegica, No. 826. (1772.)

Marshes in the Rocky Mountains, lat. 52° to 57°.—*Drummond*, in Hook., Fl. Bor.-Am. In Greenland, west coast, lat. 69° 15' to 72° 48'. Disco and Upernavik. In very wet ground near Upernavik Settlement this plant is very common.—*Hart*, Brit. Polar Expd., 1875-6. Jacobshavn and Akatont, Disco Bay, Greenland, 1867.—*Brown*. Iceland, 1860.—*Dr. W. L. Lindsay*. Norway. Lapland. Siberia. Spitzbergen. Himalayas. Arctic Areas of Europe, Asia and Greenland.—*Hook. fil.*

Sir Joseph Hooker observes that he has seen no Arctic American specimen of this plant; all so called he thinks referable to *pygmæus*. Outl. Distr. Arct. Pl., p. 312.

24.—*RANUNCULUS HYPERBOREUS*, *var. PYGMÆUS*, *Wahlenberg*.

Stem erect, without creeping flagella. Radical leaves petiolate, cauline ones sessile. Stem 1-flowered. Sepals somewhat reflexed, glabrous or slightly hairy. A very small glabrous plant, with the habit of *Saxifraga rivularis*, and intermediate between *R. hyperboreus* and *nivalis*. DC.

Ranunculus pygmæus. Wahlenberg, Fl. Lapponica, n. 286, t. 8, f. 1. Pursh, Fl., II., p. 393. DC. Syst. Nat., I., p. 273. Hook., Fl. Bor.-Am., I., p. 16. Torr. & Gray, Fl. N. Am., I., p. 20. Regel, Fl. Ost-Sib., I., p. 46. Hook. f., Arct. Pl., pp. 283 and 312. Lawson, Ranunc. Canad., p. 39. Watson, Bibl. Index, I., p. 22. Macoun, Cat. No. 40. Brown Camp., Fl. Discoana, p. 447.

R. nivalis, *β*. Linn. Sp. Plantarum, p. 778.

R. nivalis pygmæus. Fl. Lapp., p. 232, t. 3, f. 3.

R. Sabini. R. Br., in Parry's 1st Voy. App., p. 244. Hook. Fl. Bor.-Am., I., p. 17. Torr. & Gr., Fl. N. Am., I., p. 20. Durand, Kane Exp., p. 185.

R. hyperboreus. Hook. f. & Thomson, Fl. Indica, I., p. 32. Walpers, Annales, IV., p. 19. Moist grassy places on the high parts of the Rocky Mountains, in lat. 55°.—*Drummond*.

Arctic Sea coast between 170° and 140°.—*Richardson*. About Behring Strait on Chamisso Island, and that of St. Lawrence.—*Chamisso*. Melville Island.—*Parry*. Shores of the Arctic Sea, between Mackenzie River and Coppermine River.—*Richardson*. Labrador.—*Parsh*. Top of Mount Selwyn, Peace River Pass, lat. 56°.—*Macoun*. Rocky Mountains near the 49th parallel, 6000 ft.—*Dr. G. M. Dawson*. Akatont, Jacobshavn, Christianshaab, Illartlek, and Claushavn, Disco Bay, 1867.—*Brown*. Kotzebue Sound.—*Hook. & Arnott*, Bot. Beechey.—*Rothrock*. East shore of Baffin Bay (west coast of Greenland), extreme north and south limits observed: lat. 72° 48': 69° 15'; especially common at Upernavick.—*Hart*, British Polar Expedition, 1875-6. Unalashka. Spitzbergen. Scandinavia. The Tyrol. This is one of Sir Joseph Hooker's "most arctic" plants, being found far north in all the five Areas into which he divides the Arctic Region.

Hooker and Thomson point out, as the result of their examinations, that *R. pygmaeus* differs from *R. hyperboreus* only in the want of stolons. In Sikkim both the erect and stoloniferous forms occur, and Sikkim specimens cannot be distinguished from those of the north of Europe. Walpers, *Annales*, IV., p. 19. See also *Flora Indica*, I., p. 32, and Hooker's *Outlines of Distribution of Arctic Plants*, *Linn. Trans.*, 1860, p. 312.

25.—*RANUNCULUS NIVALIS*, *Linnaeus*.

Radical leaves long-stalked, cleft palmately into about five broad somewhat ovate obtuse lobes, the middle lobe obovate-cuneiform, narrowed at the base; cauline leaves palmate, nearly sessile. Flower solitary, sepals covered with matted brown hairs, upper part of peduncle with similar but shorter hairs, petals longer than sepals. Achenes glabrous, their beaks nearly straight. Form of leaf variable.

Ranunculus nivalis. *Linn. Sp. Pl.*, p. 778, (in part). *Gunneri Flora Norvegica*, p. 627. (1766.) *Smith*, in *Rees' Cyc.*, n. 38. *DC. Syst. Nat.*, I., p. 273. *Prod.*, I., p. 35. *Hook.*, *Fl. Bor.-Am.*, I., p. 17. *Regel*, *Fl. Ost.-Sib.*, I., p. 39. *Fl. Dan.*, t. 1699. *R. Brown*, in *Parry's 1st Voy. App.*, p. 264. *Richardson*, in *Frankl. 1st Jour. App.*, ed. 2, p. 24. *Greville*, *Memoirs Wernerian Soc.*, *Edin.*, III., p. 430. *Hook.*, *Fl. Bor.-Am.*, I., p. 17. *Torr. & Gr.*, *Fl. N. Am.*, I., p. 20. *Hook. & Arn.*, *Bot. Beechey*, p. 121. *Durand*, *Pl. Kane*, II., p. 448. *Hook. f.*, *Arct. Pl.*, pp. 283 and 312. *Lawson*, *Ranunc. Canad.*, p. 39. *Watson*, *Bibl. Index*, I., p. 21. *Macoun*, *Cat.*, No. 44.

R. frigidus. *Willd.*, *Spec. Pl.*, II., p. 1312. *DC. Prod.*, I., p. 35. *Hook.*, *Fl. Bor.-Am.*, I., p. 18 (under *R. nivalis*).

R. Altaicus. *Laxm.*, *Nov. Com. Acad. Petrop.*, 1774, XVIII., p. 533, t. 8. *Ledeb.*, *Fl. Rossica*, I., p. 37.

Lofty parts of the Rocky Mountain chain, lat. 55°. *Drummond*. Copper Mountains and Arctic Sea coast, in muddy pools which become dry during summer, long. 110°.—*Richardson*. Arctic coast near the termination of the Rocky Mountains, long. 140°. *Sir J. Franklin*, *Capt. Back*. Behring Strait.—*Chamisso*. Kotzebue Sound.—*Lay and Collie*, in *Beechey's Voyage*, *Rothrock*. West coast of Greenland, betw. lat. 70° and 71°, 1818-20.—*W. Jameson*. Labrador.—*Torrey & Gray*. Assistance Bay, south-west of Cornwallis Island.—*Dr. Sutherland*. Tsi-Tsutl Mountains, in muddy pools which become dry during summer, 15th July,

1876.—*Dr. G. M. Dawson*, in *Herb. Canadian Survey*. East shore of Baffin Bay or Smith Strait (West Greenland); extreme northern and southern limits observed: 81° 6': 69° 15'. On west shore of the Strait (Grinnell Land), 82° 27': 81° 42'. Flowering later than *affinis* in Discovery Bay, but remaining in blow throughout the summer. Appears to have no choice of station with regard to altitude or nature of soil, but growing more luxuriantly at low levels. In flower June 17th, in Discovery Bay. Floeberg Beach.—*Dr. Moss*. From sea-level to 2000 feet near St. Patrick Bay. Not met with north of Bessel Bay.—*Hart*, British Polar Expedition, 1876, in *Journal of Botany*. Lapland. Sweden. Norway. Spitzbergen. Iceland. This is one of Sir Joseph Hooker's "most arctic" plants of general distribution, that is, found far north in all the five Arctic Areas.

Mr. Hart, in speaking of the difficulties due to climate and to the grazing of animals, with which plants in the Arctic regions have to contend, observes that the brent goose "prefers shoots and heads of *Ranunculus nivalis*."

Prof. Oliver has described a variety of *nivalis*, with small flowers and pale hairs on the calyx (Nares' Voyage, Vol. II., p. 310, ed. 1878), which Mr. Hart refers, probably incorrectly, to *R. auricomus*, L., identifying this latter with *R. affinis*, R. Br. He says it flowered earlier than the true *nivalis*, and disappeared quickly, preferring ground slushy with the first thaw at a high altitude.

26.—*RANUNCULUS NIVALIS*, var. *SULPHUREUS*, *Watson*.

Leaves glabrous; radical ones roundish obovate-cuneate, coarsely toothed or in at the apex; cauline ones divided palmately into 5-7 entire lobes; stem one-flowered; calyx hairy, shorter than the petals.

R. nivalis, var. *sulphureus*. *Watson*, *Bibl. Index*, I., p. 21. *Macoun*, *Cat.*, under No. 44.

R. nivalis, var. *β*. *Wahlenberg*, *Fl. Lapp.*, p. 157 (excl. syn.). *Hook*, *Fl. Bor.-Am.*, I., p. 17.

R. sulphureus, *Solander*, in *Phipp's Voyage*, p. 202. *Greville & R. Brown*, *Pl. Scoresby*, Spitzbergen, *Wern. Mem.*, III., p. 424. *DC. Syst. Nat.*, I., p. 274 (excl. syn.). *Richardson*, in *Franklin's 1st Jour.*, ed. I., p. 742. *Schlecht. Animadv.*, sec. II., p. 15.

Repulse Bay.—*Dr. Rae*, ex *Herb. McTavish*. Ellesmere Land, but not met with in Grinnell Land. East and west shores of Baffin Bay, lat. 78° 18' to 78° 50'. Luxuriant at Foulke Fiord and along Hayes Sound. Elevation 700 feet at Foulke Fiord.—*Hart*, *Brit. Pol. Exp.*, 1875-6. Not met with north of Foulke Fiord. Spitzbergen.—*Capt. Scoresby*.

Arctic shores and islands. Labrador. Kotzebue Sound. Greenland. Finmark. Siberia.

27.—*RANUNCULUS NIVALIS*, var. *ESCHSCHOLTZII*, *Watson*.

Leaves ciliate; the radical ones petiolate, always tripartite, the divisions lobed; stem about 1-flowered; sepals shorter than the petals, and clothed with fulvous hairs; achenes obliquely ovate, shortly pointed.

Ranunculus nivalis, var. *Eschscholtzii*. *Watson*, *King's Rep.*, X., p. 5. *Bibl. Index*, I., p. 21. *Macoun*, *Cat.*, under No. 44.

R. Eschscholtzii. Schlechtendal, *Animadversiones Ranunc.*, II, p. 16, t. 1. DC. Prod., I., p. 86. Hook., *Fl. Bor.-Am.*, I., p. 18. Torr. & Gr., *Fl. N. Am.*, I., p. 21.

Islands of Unalashka and St. George, N. W. America.—*Chamisso*. Near the regions of perpetual snow, on the borders of streams upon the Rocky Mountains, lat. 52° to 56°.—*Drummond*. Pine River Pass, Rocky Mountains, 24th July, 1879.—*Dr. G. M. Dawson*, in Herb. Canad. Survey. Top of Mount Selwyn, Peace River Pass, lat. 56°.—*Macoun*. Rocky Mountains near the 49th parallel; and the TciTsutl Mountains and Coast Range, B.C.—*Dr. G. M. Dawson*. Kotzebue Sound to Cape Lisburne.—*Rothrock*.

28.—RANUNCULUS PALLASII, Schlechtendal.

Stem creeping, fistulous; leaves all petioled, divided into three oval, obovate or cuneate lobes; calyx of 3 sepals; corolla of 8 petals; carpels in a round head, thick, ovate, glabrous, beaked. Allied to *Ficaria* in its triphyllous calyx, and in having more than 5 petals.—*Schlecht*.

Ranunculus Pallasii. Schlechtendal, *Animadversiones Ranunc.*, I., p. 15, t. 2. Spreng. Syst. Veg., II., p. 649. Hook., *Fl. Bor.-Am.*, I., p. 10. Don, *Mill. Dict.*, p. 32. Torr. & Gray., *Fl. N. Am.*, I., p. 17. Ledebour, *Flora Rossica*, I., p. 31. Ascherson, *Fl. Lab.*, in *Flora*, XLIII., p. 369. Hook. f., *Arct. Fl.*, p. 233. Watson, *Bibl. Index*, p. 22. Macoun, *Cat.*, No. 53.

On the western shores of extreme Arctic America, beyond Behring Straits, namely in the Bays of Eschscholtz and Good Hope; and on the little Island of St. George, to the north of the Aleutian Islands.—*Chamisso*. Kotzebue Sound.—*Rothrock*. Labrador.—*Hook. fil.* Given in Sir Joseph Hooker's table of Arctic Distribution as occurring in the following areas, viz.:—Arctic Europe, Arctic Asia, Arctic W. America; also within the area of "N. E. Asia and Japan," and "N. W. America"; confined, however, in the N. E. American area to Labrador.

29.—RANUNCULUS HOOKERI, Regel.

Leaves minutely pubescent; radical ones petioled, palmately or pedately divided, with the lobes linear and entire (obtuse). Scape erect, nearly naked, 1—2 flowered. Sepals oval, concave, spreading, hairy. Petals yellow, slightly longer than the sepals. Plant 3 to 4 inches in height. Fruit not known.

Ranunculus Hookeri. Regel, *Fl. Ost.-Sibir.*, I., p. 47, (1862). Watson, *Bibl. Index*, I., p. 19. Macoun, *Cat.*, No. 43.

R. pedatifidus. Hook., *Fl. Bor.-Am.*, I., p. 18, t. 8, fig. B., (excl. syn.) Torr. & Gr., *Fl. N. Am.*, p. 21.

Barren summits of the Rocky Mountains, on the eastern side of the ridge, lat 52° to 55°.—*Drummond*.

30.—RANUNCULUS ACRIS, Linnaeus.

Root fibrous. Radical leaves palmately tripartite, segments trifid and deeply cut, uppermost stem-leaf tripartite with linear segments. Peduncles round, not furrowed. Sepals

erect-patent, pubescent. Receptacle glabrous. Petals yellow, paler than those of *R. repens* or *bulbosus*. The plant is slightly hoary with short pubescence, which gives it a pale hue, whilst *R. repens* is always, in exposed places, of a dark green color.

Ranunculus acris. Linn. Sp. Pl., p. 779. Pursh, Fl., II., p. 394. DC. Prod., I., p. 36. Hook., Fl. Bor.-Am., I., p. 18. Torr. & Gr., Fl. N. Am., I., p. 21. Torrey, Fl. N. Y. S., I., p. 14. Gray, Man., ed. 4, p. 10. Hook., f., Student's Fl., ed. 3, p. 9.

An European plant, introduced and now common throughout the cultivated parts of Canada, a weed in pastures and by waysides (much less abundant than *R. repens*, which spreads rapidly with cultivation); not seen in woods remote from settlements. Common in central Ontario, as about Kingston, &c., and also in Nova Scotia, as Halifax County, Truro and other parts of Colchester.—*Lawson*. Montreal and St. Johns, Q.—*Dr. P. W. MacLagan*. Ellis Bay, Anticosti, July 15, 1861.—*Verrill*. Gaspé, common in hay fields, 1862.—*Dr. J. Bell*. Common about Hamilton.—*Judge Logie*. Prescott district, common.—*B. Billings jr.* Windsor, N.S.—*Prof. How*. Point Rich, Newfoundland, May 7, 1861.—*J. Richardson*. Belleville; particularly abundant about Sault Ste. Marie and Garden Rivers.—*Macoun*. Lake Manitoba, July, 1861.—*Dr. Schultz*, No. 18. To lat. 58°.—*Hook*. Becoming common in East Manitoba.—*Macoun*, 1883. New Brunswick, too abundant in damp fields.—*Fowler*. Iceland.—*Lindsay*. South Greenland.—*Hook. fil.*

Animals reject this species, whilst they greedily eat *R. repens*. I have a very hairy form, collected near Kingston, 25th July, 1860.

In Sir Joseph Hooker's table of distribution of Arctic Plants (1860) this species is entered as indigenous in N.W. and N.E. America. But, in the Students' Flora of the British Islands, its distribution is given as follows:—Europe (Arctic); North Asia; introduced in America. Mr. Watson observes, in Index Bibl., that it is generally regarded as introduced in America. That this is the correct view there can be little or no doubt.

31.—*RANUNCULUS REPENS*, *Linnaeus*.

Root of strong fibres. Stem more or less erect, with prostrate creeping scions from the base. Leaf composed of 3 stalked leaflets, which are 3-lobed, the lobes trifid and cut. Flowers large, golden-yellow, on furrowed peduncles, sepals erect-patent, pubescent; receptacle hairy. Plant rough, with long hairs, or nearly glabrous.

Ranunculus repens. Linn. Sp. Pl., p. 779. Fl. Dan., t. 795. Eng. Pot., t. 516. Poir. Dict. VI., p. 112. Persoon, Synops., II., p. 105, No. 56. Smith, Eng. Fl., III., p. 51. Hook., Fl. Scot., p. 175. DC. Syst. Nat., I., p. 285. Babington, Manual, ed. 3, p. 8. Hook. f., Student's Fl., p. 7. Pursh, Fl., p. 394. Hook., Fl. Bor.-Am., I., p. 19. Torr. & Gr., Fl. N. Am., I., pp. 21 and 658. Gray, Manual, ed. 5, p. 43. Chapman, Fl. S. U.S., p. 8. Hook. f., Arct. Pl., p. 283. Wood, Cl. Bk. & Fl., p. 207. Lawson, Ranunc. Canad., p. 34. Brewer & Watson, Bot. Calif., I., p. 8. Watson, Bibl. Index, I., p. 23. Macoun, Cat., No. 48. Provancher, Fl. Canad., p. 11.

R. prostratus. Poir. Dict., VI., p. 113. Smith, in Rees's Cycl., No. 55. Eaton, Man., ed. 5, p. 358.

R. infestus. Salisb. Prod., p. 373.

R. tomentosus. Poir. Dict., VI., p. 127. Pursh, Fl., II., p. 394. DC. Syst. Nat., I., p. 292. T. & G., Fl., I., p. 23.

R. lanuginosus, var. *γ*. Pursh, Fl., II., p. 394.

R. intermedius. Eaton, Manual, ed. 3, p. 424.

R. Clintonii. Beck, Flora, p. 9.

In fields and wet pastures, abundant in many places, especially in the Maritime Provinces. Toronto, 2nd June, 1862; Quebec, May, 1884; Kingston; Brockville; Halifax. —*Lawson*. St. Joachim. Malden. Common about Montreal (McGill College Herb.); Little Metis, Q., 1882.—*Macoun*.

A small, depressed, smooth-leaved form of this species, with flowers no larger than those of *R. acris*, and sometimes smaller, occurs on the sea shore around Bedford Basin, Nova Scotia, and a similar one is occasionally found in poor wet soils inland, but it appears to be quite a different plant from the *R. nitidus* of the South. (Chapman, Fl., p. 8.) Watson (Bibl. Index) seems to identify Hooker's *nitidus* (which is obscure) with the latter. A form in the Canadian Survey Herbarium, collected at Ottawa by Mr. Fletcher, and referred by Prof. Macoun to var. *nitidus* (Chapman), is small, almost glabrous, with small flowers, and closely resembles the Nova Scotian plant.

In its several forms this species ranges over Northern Europe to Iceland, N. and W. Asia, N. Africa, as well as over a large portion of North America, both as an indigenous plant and in its weed-form in cultivated fields. It ascends to 2700 feet on the mountains of Scotland. In Western America it extends south to California. It is a very variable plant, the prolific mother of many book species. Proneness to variation, like adaptability for cultivation, depends to a large extent upon the elasticity of a plant in suiting itself to changed conditions. We see this well illustrated in the present species.

32.—*RANUNCULUS REPENS*, var. *HISPIDUS*, *Torrey & Gray*.

Stem more or less erect, clothed with long, spreading, bristly hairs; pedicels with the pubescence appressed, or less spreading.

Ranunculus repens, var. *hispidus*. Torr. & Gr., Fl. N. Am., I., p. 658. Chapman, Fl. S. U.S., p. 8. Watson, Bibl. Index, I., p. 23. Macoun, Cat. No. 48 b.

R. hispidus. Michaux, Fl., I., p. 321. DC. Syst. Nat., I., p. 289. Prod., I., p. 39. Hook., Fl. Bor.-Am., I., p. 19, in part (Watson). Torr. & Gr., Fl. N. Am., I., p. 22. Hook. f., Arct. Pl., p. 283.

R. Marilandicus. Poir., Dict., VI., p. 126. Pursh, Fl., II., p. 394. DC. Syst., I., p. 291. Prod., I., p. 40.

R. Pennsylvanicus and *Philonotis*. Pursh, Fl., p. 398.

R. fascicularis. Barton, Fl. Phil., II., p. 25, not of Bigelow.

R. Schlechtendalii. Hook., Fl. Bor.-Am., I., p. 21. Torr. & Gr., Fl. N. Am., I., pp. 24. and 659.

R. repens, var. *Marilandicus*. Torr. & Gray, Fl. N. Am., I., p. 31.

In moist shady situations. Banks of the Humber, Toronto.—*Lawson*. Ottawa.—*Fletcher*. Prescott, Ont.—*B. Billings jr.* London, Ont.—*Saunders*. Hamilton.—*Logie*. Galt.—*Buchan*. Chippewa and Malden, Ont.—*Dr. P. W. MacLagan*. Magdalene River, Gaspé, Que.; Cold Creek, Ont.; Manitoba, westward.—*Macoun*. Rivière du Loup, Que.—*Thomas*. Common near Quebec.—*Brunt*. Sackville River, N.S.—*Lawson*. Montreal and Newfoundland, McGill College Herb.—*Macoun*. Mackenzie River.—*Barnston*.

33.—*RANUNCULUS OCCIDENTALIS*, Nuttall.

"Hirsute, with shining, spreading hairs; leaves trifid or 3-parted; segments cuneate and trifid or incisely toothed, the lateral ones often sub-divided; the uppermost leaves trifid, with linear acute segments; stem divaricate, many flowered; sepals reflexed, half as long as the elliptical oblong petals; carpels smooth, much compressed, with the revolute style nearly their own length."—Nutt., in Torr. & Gr., Fl. N. Am.

Ranunculus occidentalis. Nuttall, in Torr. & Gr., Fl. N. Am., I., p. 22, excl. syn. "Gray, Proc. Am. Acad., VIII., p. 374." Watson, Bibl. Index, p. 21.

R. hispidus. Hook., Fl. Bor.-Am., I., p. 19, in part.

R. Californicus. Macoun, Cat., No. 50.

R. acris. Macoun, Rep. Geol. Survey Canad., 1875.

Abundant in the vicinity of Victoria, Vancouver Island.—Macoun. Plains of the Oregon River, near woods.—Nuttall.

34.—*RANUNCULUS PENNSYLVANICUS*, Linnaeus.

Roughly hirsute, with strong spreading bristly hairs. Stem strong and erect. Leaves of 3 distinct, slightly stalked leaflets, which are ovate-acute, ternately cleft and toothed, strongly veined. Calyx reflexed. Petals bright yellow, shorter than the sepals. Carpellary heads oval-oblong on an elongated receptacle; carpels smooth, with short straight beaks.

Ranunculus Pennsylvanicus. Linn. fil., Supplementum Plantarum, p. 272 (1781). Linn. Syst. Vegt., Litchfield Bot. Soc., p. 442 (1782). Willd., Sp. Pl., I., p. 1323. Poiret Diet., VI., p. 120. Boria, Renonc., p. 41 (excl. syn. Poir.). Barton, Comp. Fl. Phil., II., p. 25. Persoon, Synops., II., p. 104. Sm., in Rees' Cycl., n. 46. Pursh, Fl., II., p. 392. DC. Syst. Nat., I., p. 290. Prod., I., p. 40. Hook., Fl. Bor.-Am., I., p. 19. Back's Exp., p. 523. Torr. & Gr., Fl. N. Am., I., p. 22. Torrey, Fl. New York, I., p. 15. Chapman, Fl. S. U.S., p. 8. Gray, Manual, ed. 5, p. 42. Wood, Cl. Bk. & Flora, p. 207. Provancher, Fl. Canad., I., p. 11. Lawson, Ranunc. Canad., p. 35. Watson, Bibl. Index, p. 22. Macoun, Cat., No. 47. Hook. f., Aret. Pl., p. 283.

R. Canadensis. Jacquin, Miscellanea, II., p. 343 (1781). Icones Pl. Rariorum, I., t. 105 (1781-86).

R. trifolius. Mænen, Suppl., p. 70.

R. hispidus. Pursh, Fl., II., p. 395.

Nicolet and Chippewa.—Dr. P. W. MacLagan. Hinchinbrook, Ont., July, 1862; between Kingston and Waterloo, Ont., 25th July, 1860.—Lawson. Belleville, abundant in wet waste places.—Macoun. Prescott district, wastes, common.—B. Billings jr. St. Joachim.—Provancher. Fort Simpson, June.—McTavish. Fort Garry, July, 1861.—Dr. Schultz, sp. No. 126. Lake Winnipeg.—Back. To lat. 67°.—Hooker. West to the Pacific.—Torr. & Gray. Nepean.—B. Billings jr. Athabasca.—R. King, Back's Exped., 1833-4. Pictou, N.S.—McKay. Wet places, New Brunswick, rather rare.—Fowler. Gaspé, Rivière du Loup, district of Montreal and River Rouge, P.Q.; Ottawa; St. Catherines, Toronto, Ont.; wooded country to the Rocky Mountains, through British Columbia to the Pacific.—

Macoun. To within the Arctic Circle, in sub-areas: Arctic Western America and Arctic Eastern America.—*Hook. fil.* (The first sub-area includes the Arctic district from Behring Straits eastward to the Mackenzie River, and the second, that from Mackenzie River to Baffin Bay.)

35.—*RANUNCULUS RECURVATUS*, *Poir.*

Hirsute, with fine spreading hairs. Stem erect, branched above. Leaves long petioled, all similarly cleft into three oval or somewhat cuneate lobes, which are cut and toothed towards the apex; radical leaves less deeply divided than the cauline ones, and with more rounded lobes. Sepals reflexed; petals shorter than the sepals, pale yellow. Achenes crowded into a compact round head, with conspicuous slender recurved beaks.

Ranunculus recurvatus. Poir., Dict. Bot., VI., p. 123 (1804). Pursh, Fl. Am., II., p. 394. DC. Syst., I., p. 290, excl. var. *Nelsoni*. Prod., I., p. 39. Hook., Fl. Bor.-Am., I., p. 20, excl. vars. Torr. & Gr., Fl. N. Am., I., pp. 22 and 658. Torrey, Fl. N.Y. I., p. 16. Chapman, Fl. S. U.S., p. 8. Gray, Manual, ed. 5, p. 42. Watson, Bibl. Index, I., p. 22. Macoun, Cat., No. 39. Wood, Cl. Bk. & Fl., p. 207.

R. Pennsylvanicus, var. *Biria*, Hist. Renonc., p. 41.

R. lanuginosus. Walter, Fl. Carol., p. 159.

R. saniculæformis. Mühl., Cat., 56.

Not uncommon in the country along the north shore of Lake Ontario, and extending more sparingly eastward through Quebec to New Brunswick and Nova Scotia. Westwardly it disappears, according to Prof. Macoun, at Lake of the Woods. I have not quoted the localities given in Hooker's Flora Boreali-Americana, viz., Labrador, mouth of the Columbia, and eastern declivity of the Rocky Mountains, as they probably refer to other species.

Banks of the Humber and near Toronto, 2nd June, 1862; Hardwood Creek, 10th July, 1861; Delta, 2nd July, 1862; Newboro'-on-the-Rideau, 23rd July, 1859; near Trenton, 6th June, 1862; Sloate Lake, Sydenham, Ont., 7th June, 1859.—*Lawson*. Sulphur Spring, near Ancaster, July, 1859.—*Logie*. Prescott district, in woods, common. *B. Billings jr.* Nicolet, and Chippewa, Ont.—*Dr. P. W. MacLagan*. Belleville, abundant in low, moist woods.—*Macoun*. Common in Caledon.—*Rev. C. I. Cameron*. Pied du Cap Tourmente.—*Provancher*. Bass River, Kent, N.B.—*Fowler*. Pictou, N.S.—*A. H. McKay*. Beaumont, St. Joachim, Pied du Cap Tourmente, P.Q.—*Brunet*. Montreal Mountain and the Eastern Townships.—*Herb. McGill*. Ottawa.—*Fletcher*. More abundant westward, disappearing at Lake of the Woods.—*Macoun*.

36.—*RANUNCULUS NELSONI*, *Gray*.

Pilose. Stem erect. Radical leaves ternately cleft, the divisions laciniately cut into lobes. Pedicels with appressed pubescence. Sepals strongly reflexed, hairy. Petals yellow, slightly longer than the sepals. Fruit heads globular; achenes flattened, with a short curved beak, hairy.

Ranunculus Nelsoni. Gray, Proc. Am. Acad., VIII., p. 373. Watson, Bibl. Index, I., p. 20. Macoun, Cat., No. 49.

R. recurvatus, β . *Nelsoni*. DC. Syst. Nat., I., p. 290. Prod., I., p. 40. Hook., Fl. Bor.-Am., I., p. 20. Torr. and Gr., Fl. N. Am., I., p. 23. Ledeb. Fl. Ross., I., p. 44.

R. recurvatus. Bong. Veg. Sitch., p. 123. Not of Poiret and others.

R. occidentalis. Torr. and Gr., Fl. N. Am., I., p. 22., in part.

R. occidentalis, var. *parviflorus*. Torrey, Bot. Wilkes, p. 114.

Unalashka and the Aleutian Islands.—*D. Nelson*. Sitka.—*Bongard*, *Rothrock*. Near Victoria, Vancouver Island.—*Macoun*. Queen Charlotte Islands.—*Dr. G. M. Dawson*, in Herb. Canad. Survey. Oregon to Alaska.—*Bot. Calif.*

37.—*RANUNCULUS NELSONI*, var. *TENELLUS*, *Gray*.

Sparingly pilose. Stem erect, slender. Radical leaves ternately cleft into separate leaflets, cuneate at base, laciniately cleft, or else simply cleft and the divisions lobed. Flowers small. Fruit heads globular, achenes smooth. A more delicate and slender plant than the type, with more divided smaller leaves.

Ranunculus Nelsoni, var. *tenellus*. Gray, Proc. Am. Acad., VIII., p. 374. Watson, Bibl. Index, I., p. 20. Macoun, Cat., under No. 49. Brewer and Watson, Bot. Calif., ed. 2, I., p. 8.

R. tenellus. Nutt., in Torr. and Gray, Fl. N. Am., I., p. 23. Walp. Rep., I., p. 43. Hook., in Lond. Jour. Bot., VI., p. 67.

Vancouver Island, near Yale, and along the waggon road from Clinton to Quesnal, B. C.—*Macoun*. Shady woods of the Oregon and Wahlamet Rivers.—*Nuttall*. Sierra Nevada, near Yosemite.—*Bolander*.

38.—*RANUNCULUS FASCICULARIS*, *Muhlenberg*.

Root composed of a fascicle of thick fleshy fibres, or slender fusiform tubers. Stem short. Leaves ternately divided in a pinnatifid manner, more or less compound, pubescent with appressed silky hairs. Petals twice as long as the sepals. Carpels very short, usually margined, with slender terminal beaks. Some of my specimens are precisely like Hooker's figure in Fl. B.-A., but the plant varies with much broader and more irregular leaf-lobes.

Ranunculus fascicularis. Muhlenberg, Cat., p. 56. Bigelow, Fl. Bost., p. 137. DC. Syst., I., p. 291. Prod., I., p. 40. Hook., Fl. Bor.-Am., I., p. 20, t. 8, f. 1. Torr. and Gr., Fl. N. Am., I., p. 23. Torr., Fl. N.Y., I., p. 15. Gray, Manual, ed. 5, p. 43. Wood, Cl. Bk. and Fl., p. 206. Lawson, Ranunc. Canad., p. 34. Watson, Bibl. Index, I., p. 18. Macoun, Cat., No. 36.

This species is indicated by Sir William Hooker (Fl. Bor.-Am.) as ranging from "Canada" (which included, at the time he wrote, the provinces of Lower Canada or Quebec and Upper Canada or Ontario) to the south end of Lake Winnipeg. But the results of subsequent observation tend to limit this range; the plant has been observed, so far, only in the districts lying on the north and west shores of Lake Ontario, not extending either into Quebec eastwardly nor westwardly into Manitoba and the North-West Territory.

Kingston Mills, only one small patch, 1843; also Chippewa and Malden.—*Dr. P. W. MacLagan*. Near Toronto, June 2nd, 1862, and near Trenton, Ont., June 6th, 1862; also on hilly ground in the vale of Trent, above the village.—*Lawson*. Trenton depot; on commons east from Belleville and on hill above Belleville; Niagara Falls.—*Macoun*. Hamilton, Ont.—*Logie*. Common east of London, Ont.—*Saunders*.

39.—*RANUNCULUS BULBOSUS*, *Linnæus*.

Root of uniform fibres, descending from the large bulbous base of the stem, the bulb depressed-globular. Radical leaves composed of three stalked leaflets, which are tripartite, the segments trifid and cut, divisions of the upper leaves narrower, linear. Stem erect, about a foot high, furrowed, several flowered. Sepals reflexed, thin and semi-transparent at the base, receptacle hairy, petals of a golden yellow as in *R. repens*. The stem never throws out suckers. The year's bulb is formed immediately above the bulb of the previous year, which is found in a partially decayed state under the new one. *Bulbous Crow-foot*, *Buttercup*, *Gold Cup*.

Ranunculus bulbosus. Linn. Sp. Plant., p. 778. Withering, Arrangement of Brit. Pts., II., p. 508. Willd., II., p. 1324. Poiret, Dict., VI., p. 115. Eng. Bot., t. 515. DC. Syst. Nat., I., p. 295. Prodr. I., p. 41. Smith, Eng. Fl., III., p. 49. Persoon, Synops., I., p. 104. Flora Danica., t. 55. Michaux, Fl., I., p. 321. Pursh, Fl., II., p. 392. Hook., Fl. Bor.-Am., I., p. 21. Torr. and Gray, Fl., I., p. 24. Gr. Manual, ed. 5, p. 43. Wood, Cl. Bk. and Fl., p. 207. Chapman, Fl. S. U. S., p. 8. Lawson, Ranunc. Canad., p. 35. Provancher, Fl. Canad., p. 12. Watson, Bibl. Index, I., p. 18. Macoun, Cat., No. 46. Hook. f., Student's Fl., p. 8. Watson, Cybele Brit., I., p. 88. Aiton f., Hort. Kew., III., p. 356. Loudon, Hort. Brit., p. 231. Mag. Nat. Hist., I., p. 380 (figure of double bulb).

This is an old world plant, native in middle and southern Europe and in parts of north Africa and of Asia. In Europe it grows chiefly in warm dry grass fields, pastures, and by waysides. On the American Continent it has become naturalized, being "very abundant only in E. New England; rare in the interior." (Gray.) First found in Canada by *Lady Dalhousie*. Newfoundland.—*Morrison*. (Hook., Fl. Bor.-Am.) Roadsides near London, Ont.—*Dr. Burgess*, in Herb. Canad. Survey. Point Pleasant Park, Halifax, N.S., July, 1884.—*Rev. Robt. Laing*. Near Shelburne, Nova Scotia.—*Rev. Mr. Rossborough*. Also found in pastures near Barrie, Ont.—*Spotten*. And near Hamilton, Ont.—*Buchan*. Canadian specimens are rather taller and more lax than the ordinary state of the plant as found in Scotland. Whilst abundant in England and the south of Scotland, this species is rare or altogether absent in the north, and does not rise to any great altitude on the mountains, the highest station apparently being 1500 feet in Aberdeenshire, where H. C. Watson regarded it as not indigenous but possibly introduced. In Canada it has probably been brought with grass or clover seeds from Southern Europe, but now appears to be permanently established in several localities.

The name *Ranunculus bulbosus*, now in use by botanists for this plant, dates back to a period long anterior to the reformation of botanical nomenclature by Linnæus, having been applied to it by *Thalium* in the "*Sylva Hercynia*," published at Frankfort in 1588. About

the same period it was described in the work of Dodonæus and others as *R. tuberosus* whilst Tabernaemontanus figured it as *R. minus*, and Petiver, in the English Herbal, called it "Bulbous Crow-foot."

The old books contain a double variety (*R. bulbosus flore pleno*, C. Bauhin, Pinax, 179), which Provancher refers to as the *Bouton d'or* of French Canadian gardens, *R. bulbosus*, Lobel, Icones, 666, f. 2, (1591).

40.—*RANUNCULUS DIGITATUS*, Hooker.

Acaulescent, glabrous, root a fascicle of 3 to 5 clavate tubers (as in the common European *R. Ficaria*). Leaves few, petiolate, the lamina divided in a digitate manner into from 3 to 4 oblong-spathulate lobes. Flowers 1-3, terminal; sepals spreading or reflexed, half the length of the petals; petals 7-11 oblong-cuneate, obtuse, yellow, with a nectary-scale at the claw. Stamens numerous. Carpels in a nearly globose head, ovate, compressed, with a subulate very slightly recurved beak.

Ranunculus digitatus. Hooker, Jour. Bot. and Kew Gard. Misc. III. (1851), p. 124, t. 4. Walpers, Ann. (Müller), IV., p. 17. Lawson, Ranunc. Canad., p. 43. Watson, King's Reports, V., p. 8. Bibl. Index, VIII., p. 18.

Rocky Mountrins [probably Peace River], Van Express Party, spring of 1854.—Governor McTavish, H. B. Co. Rocky Mountains near Fort Hall [Oregon], Hook. l. c.

RANUNCULUS ORTHORHYNCHUS, (Hooker), has not, so far as known, been found in British America. It is a slender plant with much divided leaves, the ultimate lobes narrow and linear. Hook., Fl. Bor.-Am., I., p. 21, tab. 9. Oregon.—Douglas. See Gray, Proc. Am. Acad., VIII., p. 373.

Genus VII.—*CALTHA*, Linnæus.

Bentham and Hooker, Genera Plantarum, I., p. 6.

List of Species:—

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| 1. <i>C. palustris</i> . | 4. <i>C. leptosepala</i> . |
| 2. <i>C. palustris</i> var. <i>Sibirica</i> . | 5. <i>C. leptosepala</i> ? var. <i>biflora</i> . |
| 3. <i>C. natans</i> . | |

1.—*CALTHA PALUSTRIS*, Linnæus.

Stem thick, hollow. Leaves rounded, reniform, or cordate, lobes rounded, margin crenately notched or nearly entire.

Caltha palustris. Linn. Sp. Plant., p. 784. Fl. Dan., t. 668. E. B., t. 506. Forst., Trans. Linn. Soc., VIII., p. 323. DC. Syst. Nat., I., p. 308. Michaux, Pursh, &c. Hook., Fl. Bor.-Am., I., p. 22. Torr. and Gr., Fl. N. A., I., p. 26. Gray, Manual, p. 24. Hook. f., Aret. Pl., pp. 283 and 312. Lawson, Ranunc. Canad., p. 44. Macoun, Cat., No. 54. Watson, Bibl. Index, I, p. 8.

- C. arctica*. R. Br., in Parry's 1st Voy. Appendix, p. 265. Hook., Fl. Bor.-Am., I., p. 22. Torr. and Gr., Fl. N. A., I., p. 27.
C. orthorhyncha. Ruprecht, Fl. Caucas, p. 28.
C. palustris, var. *orthorhyncha*, Trautv., Enumer. Pl. Radde., p. 493.
C. Himalensis. Don., Prod., p. 194. (See Walpers, Ann. Bot., IV., p. 31.)
C. Govoniana. Wallich, Cat. No. 4710. Royle, Ill., III., p. 54.
C. paniculata. Wall., Cat., No. 4711.

The following described species, chiefly Austrian, are probably not really distinct, except as varieties:—*C. cornuta*, Schott; *C. latifolia*, Schott; *C. lata*, Schott; *C. intermedia*, Schott; *C. vulgaris*, Schott; *C. alpestris*, Schott; *C. Guerangerii*, Schott. (Analecta Bot. "Oestr. Bot. Woch. Bl., 1855, p. 391.") Walpers, Ann. Bot., IV., pp. 30-31.

Populago. Ray, Synops. Stirp. Brit. (1696.)

Tussilago, sive *Farfugium*. Mathiolus.

Throughout Canada in the plains, frequent.—*Hooker*. Labrador.—*Morrison*. Columbia.—*Dr. Scouler*. Near Kingston Mills, May 24th, 1859, and in several places along the course of the Rideau Canal; abundant in several places between Montreal and Ottawa, 1884.—*Lawson*. Amherstburg.—*Dr. Kemp*. Osnabruck and Prescott Junction, May 20th, 1859.—*Rev. E. M. Epstein*. Bass River, Kent, N.B.—*Rev. J. Fowler*. Swamps, Addington County, Ont., June, 1860.—*Dr. Dupuis*. York Factory.—*McTavish*. Opposite Gros Cap, June 15th.—*Dr. R. Bell*. Hamilton, in wet ground east from the city, near Mr. Aikman's house, April 25th, 1860.—*Logie*. Prescott district, common.—*B. Billings jr.* Mingan and Anticosti, 1861.—*Verrill*. Gaspé, mouth of Douglastown River, etc., June 3rd and 9th, 1862.—*Dr. J. Bell*. St. Anne River, Gaspé, June, 1883.—*Porter*, in Herb. Canad. Survey. Newfoundland, L'Anse du Loup, Straits of Belleisle, July, 1861.—*J. Richardson*. Whycocomagh, Cape Breton, July 22nd, 1883.—*Macoun*, in Herb. Canad. Survey. Bass River, N.B., in fl., June 1st, 1867, June 2nd, 1869, May 30th, 1870.—*Fowler*. Lake Winnipeg.—*R. King*, Back's Exped., 1833-4. Throughout Quebec.—*Brunet*. Extending across through the finest country to the Rocky Mountains.—*Macoun*. Coast of the Arctic Sea and Melville Island.—*Hook. f.* Richard's Island, at the mouth of the Mackenzie River.—*Pullen*. Coast of the Arctic Sea, long. 107° to 150°.—*Richardson*, *Franklin*, *Back*. Melville Islands.—*Parry*, Hook., Fl. B.-A. Iceland and North of Europe, North and West Asia to the Himalayas. Sir Joseph Hooker remarks that the absence of every form of *Caltha* in Greenland is a most remarkable fact, this one being most abundant and conspicuous in Iceland.

A double-flowered variety, still cultivated in gardens, was found wild in England in Ray's time, by D. Lawson, (Synops. 2 ed., 1696, p. 154), but it may have been known as a garden plant before that time, as it is described by C. Bauhin (1671). Sir J. Hooker refers the double variety to *C. Guerangerii*, probably *C. riparia*, Don.

2.—*C. PALUSTRIS*, var. *SIBIRICA*, Regel.

Stem sub-erect, 1-flowered; leaves reniform-cordate, with the sinus obtuse, crenate; sepals 6-7, oval.

Caltha palustris, var. *Sibirica*. Regel, Fl. Ost.-Sibir., I., p. 52. Watson, Bibl. Index, I., p. 8 (excl. synonyms?) Macoun, Cat., No. 54 (2).

C. asarifolia. DC. Syst. Nat., I., p. 309. Hook., Fl. Bor.-Am., I., p. 22. Torr. & Gr., Fl. N. A., I., p. 27.

C. palustris, var. *asarifolia*. Rothrock, Fl. Alaska, p. 442.

Unalashka and Aleutian Islands.—*D. Nelson*, in Herb. Banks, DC. Syst. Nat. Alaska.

—*Rothrock*. Hooker, although he kept this apart as a species in Flora Bor.-Am., suspected it to be too near to *C. palustris*.

3.—*CALTHA NATANS*, Pallas.

Stem recumbent, floating, flexuous, much branched, rooting. Leaves reniform-cordate, crenate, with the lobes somewhat approximated, obscurely crenate near the base, toothed towards the apex, the sinus deeper than in *C. palustris*. Flowers $\frac{1}{4}$ inch in diameter. Sepals oval. Follicles in a dense head very much shorter and broader than in *palustris*, about $\frac{1}{3}$ inch in length, with a straight beak. Flowers of nearly a pure white, according to Sir John Richardson, as quoted by Hooker.

Caltha natans. Pallas, Itin. Russ., ed. Germ., III., p. 248. Forst., Trans. Linn. Soc., VIII., p. 324. Pursh, Fl., II., p. 390. DC. Syst. Nat., I., p. 311. Hook., Fl. Bor.-Am., I., p. 22. Torr. & Gr., Fl. N. A., I., p. 27. Lawson, Ranunc. Canad., p. 45. Watson, Bibl. Index., I., p. 8. Macoun, Cat., No. 23.

C. palustris, var., Hook. f., Arct. Pl., pp. 283 and 312.

Creeping on the surface of deep sphagnum bogs, in the woody central districts from Canada (Ontario) to lat. 60°, rare.—*Richardson*, *Drummond*, Hook., Fl. Bor.-Am. This probably carries the range of the plant too far east. Flowing stream twenty miles west of Edmonton, on the Lac la Nun road, N.W.T., 1872; Peace River tributaries, near Fort St. John; Methy River, near Methy Portage, lat. 57° N.—*Macoun*, in Herb. Canad. Survey. The Amur and Kamtschatka; first found in Eastern Siberia by Pallas. Sir Joseph Hooker (Outl. Dist. Arct. Pl.) refers this as a form of *C. palustris*, stating that the prevalent opinion amongst botanists is to unite as varieties *radicans* and *arctica* also; he points out that this is a floating plant, affecting high latitudes only. It appears to me to be sufficiently distinct, the close head of short, crowded follicles being very characteristic, as well as the habit of the plant, and the form of the leaf. R. Brown distinguishes *natans* by its capsules being in a dense head,—*arctica* having linear anthers,—and *natans*, he says, has smaller leaves, white flowers and oval anthers. Collectors who may meet with the living plants will do well to notice these points.

4.—*CALTHA LEPTOSEPALA*, DeCandolle.

Root a fascicle of very long, straight, thick, simple fibres. Leaves radical, their petioles closely aggregated and sheathing each other by the very broad, thin, membranous marginal wing. Lamina elliptical-oblong, oval or heart-shaped, with acute basal sinus, and more or less sagittate, nearly entire or coarsely crenate, glabrous; first leaves smaller and shorter than the later ones and with shorter petioles. Flowers, one or two from the same root, but always on separate stalks; plant never branched, as shown in Hooker's figure 1; figure 2 shows it well. Flower 1 inch to 1 $\frac{1}{4}$ inch across; sepals about 8 or 9,

pure white with a blue or green metallic tinge on the lower surface. Anthers long, narrow, linear, pollen grains small globular, paler. One of the first flowers to bloom in spring-time in the cold bogs at the edge of dissolving snow at high elevations on the Rocky Mountains. Boiled and used as greens by the miners in Colorado.

Caltha leptosepala. DC. Syst. Nat., I., p. 310. Prod., I., p. 45. Hook., Fl. Bor.-Am., I., p. 22, tab. 10, figs. 1-6. Torr. & Gr., Fl. N. Am., I., p. 27. Gray, Pl. Fendler., p. 4. Brewer & Wats., B. Cal., p. 9.

C. biflora. Watson, Bibl. Index, I., p. 7. Macoun, Cat. DC. Syst. Nat., I., p. 310? Hook., Fl. Bor.-Am., p. 22? Torrey and Gray, Flora N. Am., I., p. 27?

C. sagittata. Torrey, in Ann. Lyc. N.Y., II., p. 164 (excl. synonym.), according to Torrey and Gray.

The sepals are not brightly shining on the inner surface, as in *C. palustris* and the buttercups (in which the cells containing the colouring matter are extremely small, compact and flat, forming a smooth surface), but have the texture of the sepals of *Anemone nemorosa*. This is a gregarious plant, often covering large spaces in boggy ground and on wet shoulders of the mountains. At a distance, the yellow centre and long, narrow sepals give it the appearance of a daisy or ox-eye. Its whole general appearance is totally unlike that of *Caltha palustris*.

Prince William Sound, north-west coast of North America.—*Menzies* (Herb. Banks, DC.) Alpine swamps in the Rocky Mountains, between lat. 52° and 55°.—*Drummond*. Cariboo Mountains, in Coast Range, British Columbia.—*Dr. G. M. Dawson*. Sitka.—*Rothrock*. Alaska.

In California, swamps near head of King's River, at 8,000 feet.—*Brewer*. Near Lassen's Peak.—*Lemmon*. Sunny margin of the creek, six miles above Santa Fé, in the mountains New Mexico.—*Fendler*. Abundantly in flower in the cold swamps among the Elk Mountains of Colorado, end of May, 1883; in flower at the highest point of the Marshall Pass, May 22nd.—*Lawson*.

5.—*CALTHA LEPTOSEPALA?* var. *BIFLORA*.

Stem 1-leaved, 2-flowered, radical leaves petiolate, reniform, crenate, with a wide sinus, sepals oblong.

Caltha biflora. DeCandolle, Syst. Nat., I., p. 310

On the west coast of North America, near Banks Island.—*Menzies*, (sp. in Herb. Banks.)

DeCandolle described as above, from the Herbarium of Sir Joseph Banks, a plant collected on the west coast of North America, near Banks Island, by *Menzies*, as *Caltha biflora*, and Hooker, in Fl. Bor.-Am., simply repeated DeCandolle's brief character, adding the remark: "I have seen no specimens which exactly accord with this, but it seems to me too nearly allied to *C. leptosepala*." Hooker and Gray followed suit. Watson, in the Bibliographical Index to American Botany, however, relegates *C. biflora* to *C. palustris*, under Regel's name var. *minima*. Prof. Macoun has followed Watson, and referred here specimens, with narrow sepals, from Tsi Tsutl Mountains, B.C., collected by Dr. G. M. Dawson, which may or may not be the same as *Menzies*'s plant. Brewer and Watson observe (Bot. California, 2 ed.) that "*leptosepala* appears to pass into *biflora*." If that be the

case it will require a stretch of imagination to connect *biflora* with *palustris*. In the absence of definite information regarding DeCandolle's plant, and its relation to the Eastern Siberian *minima* of Regel, it will be safe meantime to refer the former to *C. leptosepala*, to which both DeCandolle and Hooker thought it was more nearly related than to *C. palustris*, the former pointing out that in *biflora* the sepals were broader and shorter than in *leptosepala*,—a character, however, which, in the latter plant, is exceedingly variable.

Genus VIII.—HYDRASTIS, *Linnaeus*.

Bentham and Hooker, *Genera Plantarum*, I., p. 7.

1.—HYDRASTIS CANADENSIS, *Linnaeus*.

Stem (9 to 18 inches high) from a fleshy rhizome, bearing a few scale-like abortive leaves at base, and a large palmately divided petiolate serrated leaf near the top, the axis ending in a flower, subtended by a large palmately divided and toothed leaf or bract. Stem and leaf veins, etc., more or less hairy.

Hydrastis Canadensis. Linn. Sp. Pl., ed., 2, 3, &c., p. 784. Aiton f., Hort. Kew., III., p. 362. Persoon, Synops., II., p. 107. Michaux, Fl., I., p. 317. Pursh, Fl., p. 389. DC Syst., I., p. 218. Prodr., I., p. 123. Torr. & Gr., Fl. N. A., I., p. 40. Lindl., Fl. Med., p. 3. Gray, Genera, I., p. 48, t. 18. Manual, p. 47. Chapman, Fl. S. U.S., p. 11. Lawson, Ranunc. Canad., p. 51. Macoun, Cat., No. 76.

Hydrophyllum verum Canadensium. Linn. Sp. Pl., I., p. 146.

Warnera Canadensis. Miller, Ic., II., p. 190, t. 285.

Canada, in water.—*Linnaeus*. A mistake; the plant grows only in rich, dry ground, in shady woods. Mirvin's Woods, Prescott, Ont.—*B. Billings jr.*, in Herb. Bot. Soc. Ca. Malden.—*Dr. P. W. MacLagan*. Township of Williams Ont.—*Saunders*. County of Norfolk, Ont.—*Dr. Nichol*.

Cultivated in England in 1759 by Mr. Philip Miller.

Genus IX.—TROLLIUS, *Linnaeus*.

Bentham and Hooker, *Genera Plantarum*, I., p. 7.

1.—TROLLIUS AMERICANUS, *Muhlenberg*.

Sepals 5 or 6 or more, greenish yellow, spreading horizontally, forming an open flower. Petals small, numerous, and much shorter than the sepals and stamens.

Trollius Americanus. "Muhlenberg, Ind. Fl. Lanc., 172, (1791)." Watson. "Muhlenb. et Gaissenh. ined. Donn, Cat. Hort. Cantab." (1796.) DC. Bot. Cabinet, t. 56. Bot. Mag., t. 1988. DC. Syst. Nat., I., p. 313; Prodr., I., p. 46. Loudon, Hortus Britannicus, p. 231. Hook., Fl. Bor.-Am., I., p. 23. Torrey, Fl. N. Y., I., p. 40, t. 3. Ledeb., Fl. Ross., I., p. 51. Regel, Fl. Ost.-Sibir., I., p. 56.

T. laxus. Salisbury, Trans. Linn. Soc., VIII., p. 803, (1803.) Pursh, Fl., II., p. 391.

Torr. & Gr., Fl. N. A., I., p. 28. Lawson, Ranunc. Canad., p. 45. Watson, Bibl. Index, p. 27. Macoun, Cat., No. 64.

T. pentapetalus. Herb. Banks. (DC.)

T. decapetalus. Herb. Bose. (DC.)

Gaissenia verna. Raf., Jour. Bot., II., p. 168. (1808.)

Alpine rivulets on the eastern declivity of the Rocky Mountains, between lat. 52° and 55°.—*Drummond*. Michell Creek, British Columbia.—*Dr. G. M. Dawson*, in Herb. Canad. Survey. Top of the Rocky Mountains, Kootanie Pass; Coldwater River, Cascade Mountain, British Columbia.—*Dr. G. M. Dawson*. Mountains of Cariboo.—*Macoun*.

Pennsylvania and New York, on moist shady hills.—*Pursh*. In deep swamps, in New Hampshire to Delaware and Michigan.—*Gray*.

There is also an open-flowered *Trollius* in Siberia, etc., *T. Asiaticus*. In *T. Europæus* the sepals are connivent, forming together a round ball, hence the name Globe Flower.

Genus X.—COPTIS, *Salisbury*.

Salisbury, in Trans. Linn. Soc., London, VIII., p. 305. Bentham and Hooker, Genera Plantarum, I., p. 8.

List of species:—

1. *C. trifolia*.

2. *C. asplenifolia*.

1.—COPTIS TRIFOLIA, *Salisbury*.

Stem short, with bright yellow fibrous roots spreading from its base. Leaves long-stalked of three wedge-shaped, slightly lobed, finely toothed, shining, evergreen leaflets. Flower solitary, on a naked stalk 3 or 4 inches high. Petals very small, cucullate obconic, white. Stamens with yellow anthers.

Coptis trifolia. *Salisbury*, Trans. Linn. Soc., VIII., p. 305. *Pursh*, Fl., II., p. 390. DC. Syst. Nat., I., p. 322. Fl. Dan., t. 1519. Hook., Fl. Bor.-Am., I., p. 23. Torr. & Gr., I., p. 28. Gray, Gen. III., p. 38, t. 13. Manual, p. 45. Lange, Pl. Grœnl., p. 129. Hook. f., Arct. Fl., p. 284. Lawson, Ranunc. Canad., p. 45. Watson, Bibl. Index, p. 12. Macoun, Cat., No. 57.

Helleborus trifolius. Linn. Amœn. Acad., II., p. 355, t. 4, f. 18, (1751.) Sp. Plantarum, p. 784. Kalm, Resa til N. America, III., p. 379, (1761.) Aiton f., Hort. Kew., III., p. 361. Michaux, Fl., I., p. 325. Bigelow, Fl. Bost., p. 134.

Anemone Grœnlandica. Oeder, Fl. Danica, IV., t. 566.

Helleborus trilobus. Lamarck, Encyc. Meth., Bot., III., p. 98.

Chrysa borealis. Raf. Schm., "N. Y. Med. Rep., V., p. 350." Desv. Jour., Bot., II., p. 170.

Canada, and thence to lat. 58°, in dry, sandy and mossy places.—*Hooker*. Labrador. *Morrison* (Hook). Toronto, June 2nd, 1882, in fl., not common; Halifax County, N.S., and throughout Nova Scotia, common in many places in moist woods.—*Lawson*. Bass River, Kent, N.B.—*Prof. Fowler*. Hudson Bay Territories, several specimens.—*McTavish*. St. Augustine, Labrador, 1865.—*Rev. D. Sutherland*. Opposite Gros Cap, June 15th.—*Dr. R. Bell*. Shore of Lake Medad, Hamilton, Ont., May 17th, 1860.—*Logie*. Prescott district,

common.—*B. Billings jr.* Anticosti, July, 1861.—*Verrill.* Gaspé Basin, south side, June 2nd, 1862.—*Dr. J. Bell.* Windsor, N.S.—*Prof. Howe.* Nicolet, Montreal; St. Valentine, P.Q.; Kingston and Port Robinson, Ont.—*Dr. P. W. Macdagan.* Herb. Edin. Belleville, borders of swamps, under evergreens.—*Macoun.* Terrebonne and L'Islet.—*Provancher.* Rare in the interior of the western country, certainly not about Lake Winnipeg.—*Barnston.* Abundant from Newfoundland and Nova Scotia to the Rocky Mountains.—*Macoun.* Manitoba House, June 14th, 1881; Belleville, Ont., June 10th, 1876.—*Macoun.* in Herb. Canad. Survey. St. Anne des Monts, P.Q., June 12th, 1883.—*Porter.* Sitka and Unalashka.—*Torr. & Gr.* Sitka.—*Rothrock.* In Siberia, in shady woods, with *Oxalis* and *Circea*.—*Linnaeus.* Arctic Asia, South Greenland, N. Europe, N. and N. E. Asia, and N. W. and N. E. America.—*Hook. f.* Arct. Pl. Not British.

Introduced to English gardens by the Hudson's Bay Company, in 1782.—*Aiton f.* Hort. Kew., l. c.

This plant is very regular in its period of flowering, and well adapted to indicate the forwardness of the spring season. As observed by Prof. Fowler, at Bass River, New Brunswick, it came into flower in the several years, at the following dates, showing a range of difference of four days only in the four years:—

1867. May 24th.

1869. May 26th.

1868. May 27th.

1870. May 28th.

Under the name of "Gold Thread," which it has obtained on account of the rich yellow colour of its roots, this plant is collected and commonly sold in the public markets as a medicinal herb. Large quantities are exported from Yarmouth County, Nova Scotia, to the United States.

2.—*COPTIS ASPLENIFOLIA*, *Salisbury.*

Stem short, leaves bipinnate, ternately divided, the leaflets incisedly lobed and toothed, radical leaves long-stalked. Peduncle branched, bearing usually 2 flowers. Petals long and narrow, dilated and cucullate about the middle, erect-spreading, longer than the strongly reflexed sepals. Carpels about 9, horizontal, on pedicels of their own length, half an inch long, with longitudinal veins, ventrally swollen, straight on back with slightly recurved tip and obsolete beak. Plant glabrous, with minute hair-bases on stem and leaves.

Coptis asplenifolia. Salisbury, Trans. Linn. Soc., VIII., p. 306. Pursh, Fl., II., p. 391. DC. Syst. Nat., I., p. 322. Prodromus, I., p. 47. Hook., Fl. Bor.-Am., I., p. 23, t. 11 (excl. syn.), (*asplenoides* in note.) Ledeb., Fl. Rossica, I., p. 53. Torr. & Gr., Fl. N. A., I., p. 28. Watson, Bibl. Index, p. 12. Macoun, Cat., No. 58.

Thalictrum Japonicum, Thunberg, included among the "*Thalictra dubia aut non satis nota*," by DeCandolle, in Syst. Nat., was referred in Flora Bor.-Am. to this species, but Sir Joseph Hooker has kindly responded to my enquiries (letter, Aug. 11th, 1884) by informing me that the Japanese plant is *Coptis trachypetala*, Sieb. & Zucc., and that *C. asplenifolia*, Salisb., does not occur in Japan.

North-west coast of N. America.—*Menzies, Douglas.* Observatory Inlet.—*Scooter.* Rich woods, Queen Charlotte Islands, July 18th, 1878.—*Dr. G. M. Dawson,* in Herb. Canad. Survey. Rich woods, New Westminster, B.C.—*Macoun.* Sitka.—*T. & G., Rothrock.*

In Dr. Dawson's specimens the carpels are much longer than in Hooker's figure in the Flora Boreali-Americana.

Genus XI.—AQUILEGIA, *Linneus*.Bentham and Hooker, *Genera Plantarum*, I., p. 8.

List of Species:—

- | | |
|---------------------------|---|
| 1. <i>A. Canadensis</i> . | 4. <i>A. cœrulea</i> , var. <i>flavescens</i> . |
| 2. <i>A. formosa</i> . | 5. <i>A. brevistyla</i> . |
| 3. <i>A. truncata</i> . | 6. <i>A. vulgaris</i> . |

1.—AQUILEGIA CANADENSIS, *Linneus*.

Segments of leaves trifid. Sepals oblong-lanceolate, scarcely spreading, of an orange-scarlet colour. Petals nearly straight and trumpet shaped, the spur orange-scarlet (as the sepals), lamina pale yellow, the fleshy attachment white, lamina not thrown back but continuous in direction with the spur; spur twice the length of the lamina, its end inflated with an almost colourless polished intumescence. Stamens and styles much exserted, or produced beyond the floral envelopes. Follicles downy, with very long thread-like beaks.

Aquilegia Canadensis. Linn. Sp. Pl., p. 752. (1753.) Bot. Mag., t. 246. Loddiges, Bot. Cabinet, t. 888. Michaux, Fl. I., p. 316. Pursh, Fl., p. 372. DC. Syst. Nat., I., p. 337. Prod., I., p. 50. Hook, Fl. B.-A., I., p. 24, in part. Torr. & Gray, Fl. N. A., I., p. 29, (excl. β . hybrida, Hook., and β . violacea, Nutt.) Gray, Manual, p. 45. Ill., Gen. I., t. 13. Pl. Fœd., p. 4. C. A. Meyer, Sertum Petropolitanum, under t. 11. Chapman, Fl. S. U.S., p. 9. Wood, Cl. Bk. & Fl., p. 210. Provancher, Fl. Canadienne, p. 15. Hook. f., Arct. Pl., pp. 284 and 313. Baker, Gard. Chro., new series, X., p. 20. Lawson, Ranunc. Canad., p. 46. Porter, Fl. Colorado, p. 4. Watson, Bibl. Index, p. 6. Macoun, Cat., No. 59.

A. variegata. Moench, Meth. Marburg., p. 311. (1794.)

A. elegans. Salisb. Prod., p. 374. (1796.)

A. flaviflora. Tenney, Am. Nat., I., p. 388.

A. corolla simplici, nectariis fere rectis. Gronovius, Virg., p. 59. (1743.)

A. pumila præcox Canadensis. Cornuti Canad., p. 60, t. 60. (1635.)

A. præcox Canadensis, flore externo rubicundo, medio luteo. Moris., Hist., III., p. 457. (1680.)

A. Virginiana flore rubescente. Plukenet, Almagestum, 38. (1796.)

The Early Red Columbine of Virginia. Parkinson's Theatrum Botanicum, 1367. (1640.)

In woods and open clearings, chiefly where the soil is dry and sandy, in Ontario, but most writers speak of its growing on rocks, or in rocky places. Near Toronto, June 2nd, 1862, a robust leafy form, much branched above. Abundant about Kingston, especially near Kingston Mills, Waterloo, and Wolfe Island.—*Lawson*. Montreal Mountain, May, 1848, and Niagara.—*James Adie*. Rear of Ernestown, 1860.—*Dr. Dupuis*. Caledon, rather rare.—*Rev. C. I. Cameron*. Nicolet, Montreal, Kingston, Niagara River, and Malden.—*Dr. P. W. MacLagan*. Pied du Cap Tourmente.—*Provancher*. Belœil Mountain.—*Dr. John Bell*. Mountain side, west of Hamilton, Ont., common, May, 24th, 1859.—*Judge Logie*. Prescott district, common.—*B. Billings jr.* Falls of Montmorenci, Point Lévis, and Orleans Island, P.Q.—*Brunet*. Gneiss rocks, Sixteen Mile Lake, River Rouge, P.Q.—*D'Urban*. Belleville, common in rocky or sandy open woods; Kaministiquia River.—*Macoun*. Near Emerson,

Manitoba.—*Dr. G. M. Dawson*. "Saskatchewan Plains.—*Bourgeau*." "Lake Winnipeg."—*R. King*, in *Back's Expedition*, 1833-4. Southern limit 40° N. lat., Northern limit 56° N.—*Barnston*. No indigenous *Aquilegia* has been found in New Brunswick, Nova Scotia, Cape Breton, Prince Edward Island, Newfoundland, Labrador, or Anticosti.

In dry deep loose sandy soils about Toronto the plant is much larger in all its parts than in the loams overlying the limestone and Laurentian rocks about Kingston. When cultivated in ordinary garden soil, and especially in moist climates, as in Nova Scotia and in the Edinburgh Botanic Garden (where it was grown by the late James McNab, from seeds collected by himself in America), the flowers become much less vivid in colour than in the arid soils and hot summer climate of its home in Ontario and western Quebec.

The geographical range of this plant, which is the most easterly *Aquilegia* on the American continent, is not correctly given in any work hitherto published, its distribution having been mixed up with that of other species, and, in some cases, erroneous localities have been cited. Sir Wm. Hooker, in quoting Fort Vancouver and mouth of the Columbia, no doubt referred to another species. Torrey and Gray indicated Hudson Bay to Georgia and west to Missouri, not noticing its absence from a large portion of eastern British America, and Nuttall's plant from Big Blue River of the Platte is, no doubt, different. Wood does not indicate its range with much precision when he says: "It grows wild in most of the States." Baker speaks of it as universally spread throughout the eastern States from Canada to Florida, observing that the true *Canadensis* is confined to the east side of the Rocky Mountains. And, lastly, Prof. Macoun, in his excellent Catalogue of Canadian plants, repeats a mistaken locality, on authority of a Halifax list, that would extend the plant eastward in British America at least seven degrees farther than it is known to grow. A fuller record of localities than we now possess is required to determine the precise north-eastern and south-western limits of the plant in British America. Our Canadian and American botanists and collectors have not yet got fully into the way of publishing, in the botanical periodicals, localities for rare, unusual, or critical species, and local lists,—a practice which, in Britain and some other European countries, has proved highly useful in furnishing data for working up geographical distribution.

Mr. Baker observes that this plant was well known to our pre-Linnæan botanists and cultivators, being one of the plants introduced to Europe by Tradescant. I have given some of the old references (in synonymy) to illustrate this point. He further observes: "We have a variety gathered by Fendler in New Mexico, with a smaller limb than in the type (linear-oblong, sepals one-third inch long, lamina of petals one-quarter inch), and a very long slender spur." This is no doubt the plant referred to by Gray, in *Plantæ Fendlerianæ*, p. 4. In May, 1883, I gathered on the mesa at the base of Mount Marcel-lane, on the Pacific slope of Colorado, elevation about 9,000 feet, a form corresponding to Fendler's plant in the slender spurs, but the sepals are very obtuse, and no longer than the petal-laminae, and the stamens are only slightly protruded beyond the petals and sepals, the filaments nearly all of one length. It may rank as a variety of *Canadensis*,¹ but is possibly a hybrid.

¹ *A. Canadensis parviflora*. Foliage thin, pedicels hairy; sepals not at all spreading, obtuse, scarcely longer than the lamina. Spur of a deep red colour, inclined to claret, paler towards the limb, which is of a rather bright yellow, sepals similar in colour to the spur, paler at the tips.

This species is the only American *Aquilegia* noticed in "Hortus Kewensis," Ed. 2, wherein it is stated to have been introduced to English gardens before 1640 by Mr. John Tradescant sen., flowering in April and May,—rather earlier than in its Canadian home.

2.—*AQUILEGIA FORMOSA*, Fischer.

Plant robust, two to three feet high. Leaves very glaucous on the lower surface slightly so on the upper, the uppermost sessile leaves or bracts trifoliate, not at all incised. Sepals spreading, lanceolate to broadly ovate-lanceolate, more or less acute, about one-third inch wide, longer than the spurs, sometimes nearly twice their length, usually bright red. Petals with a short truncate yellow lamina varying in size to half the length of the sepals. Petal-spur puffed out (belly-like) in the upper half, rather abruptly narrowed below, with a terminal knob. Styles as long as the sepals, the upper stamens projecting considerably beyond the laminae of the petals. Follicles under one inch in length, one-third as broad as long, hairy (or glabrous?), with filiform beaks nearly their own length. Pedicels hairy. Mr. Baker observes that this species is very near the eastern *A. Canadensis*, from which it differs by its larger sepals, quite twice as long as the petal lamina.

Aquilegia formosa. Fischer, in DC. Prodr., I., p. 50. Ledebour, Flora Rossica, I., p. 56. Torrey & Gray, Flora N. Amer., I., p. 30. Lawson, Ranunc. Canad., p. 47. Regel, Gartenflora, II., p. 219. Flore des Serres, VIII., t. 795. Baker, Synops. Aquilegia, Gar. Chro., n. s., X. (1878), p. 111. Watson, Bibl. Index., I., p. 7. Brewer & Wats., Bot. Calif., I., p. 10. Macoun, Cat., No. 60, in part.

A. Canadensis. Hook., Fl. B.-A., I., p. 24, in part.

A. Canadensis, var. Bongard, in Mem. Acad. St. Petersburg, Sc. Phys. et Math., ser. 6, II., p. 124. Torrey, Pac. R. Rep., p. 462; Mex. Bound, p. 30.

A. Canadensis, var. *formosa*. Cooper, Pac. R. Rep., XII., p. 55. Watson, King's Rep., 40th parallel, V., p. 10. Torrey, Bot. Wilkes, 216.

A. arctica. Hortul. (Walpers.) London, Steudel, Nomencl. Botanicus. Regel, Gartenflora, II., p. 19.

Queen Charlotte Islands, July 16th, 1878.—Dr. G. M. Dawson. Vancouver Island; mainland of British Columbia, from the valley of the Fraser to lat. 56°, western slopes of Rocky Mountains.—Macoun, Dawson. Sitka and Unalashka.—Bongard. (T. & G.) Sitka. Herb. Mus. Paris.—Walpers, l. c. Rothrock. From Sitka down the west side of North America to California, ascending in the Rocky Mountains to 6,000—7,000 feet; Kamschatka, according to DeCandolle's Prodr., but I have not seen Old World specimens.—Baker. Oregon.—Nuttall. Some of the localities cited may possibly relate to *A. truncata*.

3.—*AQUILEGIA TRUNCATA*, Fischer & Meyer.

Flowers red with orange or yellow. Sepals spreading or reflexed, equal in length to the spurs, which are gradually and uniformly narrowed from the open truncate mouth to the apex. Lamina scarcely at all developed. Follicles six or seven times as long as broad,

with prominently embossed veins, and slightly hairy. Brewer and Watson observe that this plant is very variable as to size, foliage and colour of flowers. In Prof. Macoun's specimens the gradually narrowed trumpet-like petal spur, and the long slender follicles, are striking characters; but Mr. Baker observed that, in a large bundle of specimens at Kew, he could not draw any distinct line of demarcation between this species and *A. formosa*. It is not to be concluded from this that the plants are not really distinct, as we now know how prone *Aquilegias* are to hybridize and thus furnish puzzling connecting links.

Aquilegia truncata. Fischer & Meyer, Index Seminum Petropolitenum, 1843, p. 8. Regel, Sert. Petrop., 1852, t. and p. 11. Lawson, Ranunc. Canad., p. 47. Brewer & Watson, Bot. California, I., p. 10. Watson, Bibl. Index, I., p. 7.

A. Canadensis. Torrey, Pacif. R. Rep., IV., p. 62.

A. Californica. Hartweg, in Lindl. Gar. Chr., 1854, p. 836, cum. ic. Gray, Proc. Am. Acad., VII., p. 328. Regel, Gartenflora, IV., p. 131.

A. eximia. Planchon, in Flore des Serres, 1857, t. 1188.

A. formosa var. Baker, Synops. *Aquilegia*, Gard. Chro., X. (1878), p. 111.

A. formosa. Macoun, in Herb. Canadian Survey. Cat., No. 6, in part.

Rich ground and grassy slopes along streams, Black Water River, British Columbia, June 11th, 1875.—*Macoun*, in Herb. Canad. Survey. Shady places by streams, California. —*Brewer & Watson*.

4.—*AQUILEGIA CÆRULEA*, var. *FLAVESCENS*.

Sepals reflexed in the expanded flower, lanceolate, yellow or slightly flushed on the back with red. Petal-lamina obovate cuneate, of a paler yellow than the sepals, truncate at apex; spur nearly half an inch long, yellow, slightly incurved, knobbed. Styles and stamens much exserted. Follicles pubescent.

A. flavescens. Watson, Bot. 40th Parall., King's Rep., V., p. 10. Gray, Am. Jour. Sc., ser. 3, III., p. 149. Porter, Hayd. Rep., 1871, p. 477. Coulter, do, 1872, p. 759. Baker, Synops. *Aquilegia*, Gard. Chro., X., (1878), p. 20. Watson, Bibl. Index, I., p. 7. Macoun, Cat. No. 63.

A. Canadensis, var. *aurea*. Roehl, in Regel's Gartenflora, 1872, p. 258, tab. 734.

Rocky Mountains.—*Bourgeau*. Dry rocky slopes, Michell Creek, British Columbia, July 11th, 1883; Kootanie Pass. Rocky Mountains.—*Dr. G. M. Dawson*, in Herb. Canad. Survey. Bow River Pass, in thickets, and at the base of the cliffs of the eastern range — *Macoun*. Subalpine zone of the Rocky Mountains in Utah and Oregon, at an elevation of from 5,000 to 7,000 feet above sea level.—*Baker*, who observes, "This is now widely spread in English gardens."

The normal form of the species has a Southern distribution, and is not found within British America.

5.—*AQUILEGIA BREVISTYLIA*, *Hooker*.

Flowers bluish-purple, varying to paler (claret) colours, or white, but never orange-red or yellow as in other N. American species. Sepals ovate-lanceolate, rather longer than

the petals. Petal-spurs incurved, knobbed at the end, about equal in length to the lamina. Stamens and styles short, included. Follicles pubescent. General aspect of *A. vulgaris*, but more delicate in stem, foliage, and flowers, the last much smaller; the stamens and styles shorter.

Aquilegia brevistyla. Hooker, Fl. Bor.-Am., I, p. 24. Torr. & Gr., Fl. N. A., I, p. 30. Lawson, Ranunc. Canad., p. 47. Hook. f., Arct. Pl., pp. 284 and 313. Baker, Gard. Chro., X, p. 20, (1878). Watson, Bibl. Index, I, p. 6. Macoun, Catalogue, No. 61.

A. vulgaris? Richardson, in Franklin's 1st. Journal, ed. 2., App., p. 21.

A. vulgaris var. *brevistyla*. Gray, Am. Jour. Sc. ser. 2, XXXIII, p. 410. Porter, Fl. Colorado, p. 4.

Western parts of Canada. —*Drummond*. As far north as Bear Lake. —*Richardson*. Clear Water River, July 18th; Nipigon, 1853; Fort Simpson. —*McTavish*; also, in a parcel from McTavish labelled "L. Nipigon, chiefly near Lake Superior." —*Herb. Lawson*. Received from Mackenzie River. —*Barnston*. Rocky Mountains. —*Bourgeau*. Sitka, Hudson Bay Territory, and down the Rocky Mountains as far south as Colorado. —*Baker*. Telegraph Trail, B.C., and Peace River, at the Rocky Mountain Portage, lat. 56°. —*Macoun*. This species was not known west of the Rocky Mountains until found in British Columbia by Prof. Macoun. But Sir Joseph Hooker remarked in 1860, (Dist. Arct. Pl.) that he had seen specimens of a Sitka plant, in an indifferent state, which were a great deal like it, and that *brevistyla* was allied to the Siberian *A. parviflora*, Led.

6.—*AQUILEGIA VULGARIS*, *Linneus*.

Spurs incurved like a crozier, shorter than the very broad lamina. Stamens exserted, the inner ones frequently imperfect. Sepals ovate-lanceolate with acute tips, twice the length of the spurs. Flowers large, most commonly blue, but varying to purple, rose, white, etc. Cultivated varieties are striped or have double flowers, having two or more rows of petals.

Aquilegia vulgaris. Linn. Sp. Pl., p. 752. Eng. Bot., t. 297. DC. Syst. Nat., I, p. 334 (with a page and a half of synonyms and references.) Bab., Man. ed. 3, p. 10. Hook. f., Student's Fl., p. 11. Gray, Manual, ed. 5, p. 45. Lawson, Ranunc. Canad., p. 47. Macoun, Cat., No. 62.

Abundant in the neighbourhood of Prince's Lodge, Halifax County, the property formerly occupied by H. R. H. the Duke of Kent, and in spots along the Railway Line; also in several places on the road between Halifax and Windsor. About the end of June the deep railway cutting at Prince's Lodge looks like a magnificent flower garden from the abundance of this plant, in every variety of colour, on the rocky cliffs.

Genus XII.—*DELPHINIUM*, *Linneus*.

Bentham and Hooker, Genera Plantarum, I, p. 9.

List of species:—

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|---------------------------|--------------------------|
| 1. <i>D. scopulorum</i> . | 4. <i>D. azureum</i> . |
| 2. <i>D. Menziesii</i> . | 5. <i>D. Ajacis</i> . |
| 3. <i>D. variegatum</i> . | 6. <i>D. orientale</i> . |

1.—*DELPHINIUM SCOPULORUM*, Gray.

Tall, smooth or finely pubescent. Petioles of the lower leaves long and dilated at the base, lamina orbicular in outline, 3 to 5 parted, the segments laciniately lobed, lobes acute. Raceme rather strict, many flowered (slightly compound or paniced below.) Flowers sparingly pilose externally, spur straight, as long as the sepals; lower petals bifid, slightly bearded. Root perennial, fibrous.

Delphinium scopulorum. Gray, Pl. Wright., II., p. 9. Smiths. Contrib., V., p. 9. Walpers, Ann., IV., p. 24. Am. Jour. Sc., ser. 2, XXXIII., p. 242. Brewer & Watson, Bot. Calif., I., p. 11. Wats., Bibl. Index, p. 14. Macoun, Cat. No. 66.

D. exaltatum. Hooker, Fl. Bor.-Am., I., p. 25. Lawson, Ranunc. Canad., p. 47, (not of Aiton, DC., Gray.)

Rocky Mountains, between lat. 52° and 56°.—*Drummond*. Hook., Fl. Bor.-Am. The Yukon country adjoining Russian Territory; Clear Water; July 18th.—*McTavish*. Saskatchewan and Rocky Mountains.—*Bourgeau*. Abundant near Morley, Bow River; on the Saskatchewan, as far east as Carleton, and northward to the Peace River, lat. 56°.—*Macoun*. Iroquois Creek, near Fort McLeod, Brit. Columbia.—*Dr. G. M. Dawson*. New Mexico.—*Gray*.

2.—*DELPHINIUM MENZIESII*, DeCandolle.

Dwarf, very hairy, except at the base. Petioles scarcely dilated at base, lamina 5 parted, the divisions cleft into linear entire lobes. Racemes 3 to 6 flowered. Flowers large, deep blue, veined with purple, pubescent on the external surface; spur straight, as long as the sepals; follicles somewhat tomentose. Root fleshy.

Delphinium Menziesii. DC. Syst. Nat., I., p. 355. Prodr., I., p. 54. Bot. Reg., t. 1192. Hook., Fl. Bor.-Am., I., p. 25. Bot. Beechey, Supp., p. 317. Torr. & Gr., Fl., Supp., I., p. 661, (not of p. 81, which is *D. simplex*, Douglas.) Hook. f., Arct. Pl., pp. 284, 313. Rothrock, Fl. Alaska, p. 442. Brewer & Watson, Bot. Calif., p. 11. (Not of Porter, Colorado Fl.) Macoun, Cat. No. 67.

D. tuberosum. Menzies MSS.

D. pauciflorum. Nutt., in Torr. & Gr., Fl. N. A., I., p. 38, (see p. 661).

D. Nuttalliana. Pritz.

D. patens. Newberry, Pac. R. Rep., VI., p. 65.

In Nova Georgia.—*Menzies*, sp. in Herb. Banks.—DC. Syst. Nat. North-west coast of America.—*Menzies*. Kotzebue Sound.—*Capt. Beechey's* collection. Common under the shade of solitary pine trees, at Puget Sound, the Columbia River, and in California.—*Douglas*. Hook., Fl. Bor.-Am. In pine woods, from Kotzebue Sound to Oregon. Torr. & Gr., Fl., I., p. 661. Kotzebue Sound to Cape Lisburne.—*Rothrock*, Alaska. Abundant on Cedar Hill, and in many other localities near Victoria, Vancouver Island.—*Macoun*, *Dawson*.

From Puget Sound to Montana and the Blue Mountains of Oregon, apparently not entering California.—*Brewer & Watson*, l. c.

3.—*DELPHINIUM VARIEGATUM*, Torrey & Gray.

Pubescent, with straight, spreading, or somewhat tomentose hairs. Leaves three parted, the segments cuneiform, many cleft into narrow linear rather obtuse lobes. Flowers large, on long pedicels, in a short open raceme, blue; sepals broad, spreading, spur short and stout. Flower stalks and follicles very hairy. Root of fleshy fibres.

Delphinium variegatum. Torrey & Gray, Fl. N. A., I, p. 32. Brewer & Watson, Bot. Calif., I, p. 10. Watson, Bibl. Index, I, p. 14. Macoun, Cat., No. 68.

D. grandiflorum, var. *variegatum*. Hook. & Arn., Bot. Beechey, p. 317.

D. decorum. Benth., Pl. Hartweg., p. 295.

Under the cliffs near the waggon road, Yale, British Columbia.—Macoun, A. J. Hill. Lytton, B.C. 20th May 1876.—Dr. G. M. Dawson, in Herb. Canad. Survey. California.—Douglas. In the coast ranges from Santa Barbara to Punta de los Reyes.—Brewer & Wats., Bot. Calif.

4.—*DELPHINIUM AZUREUM*, Michaux.

Glabrous or slightly pubescent. Petioles slightly dilated at base, the lamina 3 to 5 parted, the segments cleft into linear lobes. Raceme loose, perfectly simple, the pedicels long and spreading. Flowers azure coloured, darker or paler, petals shorter than the sepals, the lower ones densely bearded, spur longer than the sepals. Perennial. A very variable species, and of wide distribution, if all the forms referred really belong here.

Delphinium azureum. Michaux, Fl. Bor. Am., I, p. 314. (1803). Poir. Sup., II, p. 458. Pursh, Fl. II, p. 371. Persoon, Synops., II, p. 82. DC. Syst. Nat., I, p. 356. Prod., I, p. 54. Bot. Reg., t. 1999. Torr. & Gray, Fl. N. A., I, pp. 32 and 660. Loudon, Hort. Brit., p. 222, No. 14,147. Gray, Pl. Fendlerianæ, p. 5. Pl. Lindheimerianæ, p. 142, (under *D. virescens*). Manual, p. 46. Chapman, Fl. S. U.S., p. 10. Lawson, Ranunc. Canad., p. 48. Watson, Bibl. Index, p. 12. Macoun, Cat., No. 69.

D. Carolinianum. Walter, Fl. Carolina, p. 155. (1788).

D. virescens. Nuttall, Genera N. A. Pl., II, p. 14. (1818). Torr. & Gr., Fl. N. A., I, p. 32. Wood, Cl. Bk. and Fl., p. 210. Gray, Pl. Lindheim., p. 142.

D. vimineum. Don, in Sweet's Brit. Fl. Gard. t. 374. Bot. Mag., t. 3593. Torr. & Gr., Fl. N. A., I, p. 32.

D. simplex. Gray, Pl. Wright., II, p. 8, according to Watson in Bibl. Index, (but not of Douglas, Hooker, nor Brewer and Watson).

West of Rocky Mountains, between Fort Yukon and Lapierre House; also Yukon country (fl. smaller, pedicels and spurs shorter).—McTavish. Dry slopes, Cypress Hills, June 9th, 1883.—Dr. G. M. Dawson, in Herb. Canad. Survey. South of Lake Winnipeg.—Dr. Houghton. Plains near Wood Mountain, N. W. Territory.—Dr. G. M. Dawson. New Mexico.—Fendler. Colorado.—Lawson. Wisconsin, Illinois, and Southward.—Gray, Man. North Carolina to Georgia.—Torrey & Gray, Fl. Texas.—Drummond. Arkansas.—Nuttall, Pitcher.

Walter's name, *Carolinianum*, is older by fifteen years than the *azureum* of Michaux; but, as this may ultimately prove to be a composite species, and the nomenclature of the genus cannot be regarded as settled, I have meantime retained the latter name as the one commonly used.

[*D. SIMPLEX*. Douglas, in Hook., Fl. Bor.-Am., I., p. 25, is a southern plant found by Douglas on the sub-alpine range, west of the Rocky Mountains, near the Columbia, plentiful; and by Brewer in the coast ranges south to San Diego. It also occurs in Idaho. Much resembling *D. azureum* of the eastern plains, but differing in its less strict habit, and looser racemes of larger and more open flowers. (Bot. Calif.)

5.—DELPHINIUM AJACIS, Reichenbach.

Stem erect, divaricately branched. Racemes elongated, rather laxly flowered, pedicels as long as the bracts. Follicles solitary, pubescent. Annual or biennial. *Dwarf or Branched Larkspur*.

Delphinium Ajacis. Reich. (not Linn.) Hook. fil., Student's Flora, p. 11.

D. Consolida. Hooker, British Fl.; Babington, Manual; and other British authors prior to year 1868, (not of Linn.); Pursh, Fl., p. 372. Beck, Bot., p. 13. Torr. & Gr., Fl. N. A., I., p. 30. Darling, Fl. Cest. 3 ed., p. 7. Chapman, Fl. S. U.S., p. 10. Gray, Mant. II, p. 46. Wood, Bot. & Fl., p. 210. Lawson, Ranunc. Canad., p. 48. Watson, Bibl. Index, I., p. 444. Macoun, Cat., No. 65.

An introduced Southern European plant.

Banks of the St. Lawrence River west of Prescott, Ontario.—*B. Billings jun.*, in Herb. Bot. Soc. Canada. Gardens, waste places, and wheat fields, near Belleville, Ont.—*Macoun*. Vicinity of Hamilton, Ont.—*Buchan*.

This plant has been known in Cambridgeshire, England, since the days of Dillenius, but has not spread there, and, beyond the chalk districts, is little more than a casual straggler. See H. C. Watson, Cybele Britannica, I., p. 97. It may have been brought to Canada in grain or grass seed from England or continental Europe, and seems to find congenial conditions in the light soils overlying the limestones of Ontario.

The true *D. Consolida* of Linnæus differs from this species in having shorter *glabrous* follicles, short racemes, and seeds with interrupted ridges. (Hook. fil.) It is a southern European plant, not native of England, and found only once in a field in Jersey. The Canadian localities hitherto published for "*D. Consolida*, *L.*" no doubt all belong to *D. Ajacis*, Reich. The *D. Ajacis* of my Monograph of Ranunculaceæ is *D. orientale*. Sir Joseph Hooker says:—"Syme observes that *D. Ajacis*, Reich. (and continental European authors) is not the plant of Linnæus (which is *orientale* of Gay); hence the present plant should have a new name; but as the names, *Consolida*, *orientale*, and *Ajacis*, are now fixed, it is unwise to disturb the present arrangement."

6.—DELPHINIUM ORIENTALE, J. Gay.

Stem erect, straight, almost unbranched, whole plant nearly glabrous; the flowers in a long dense raceme, pedicels as long as the bracts; capsules pubescent. Annual.

Delphinium orientale. J. Gay. Boiss., Fl. Orient., I., p. 79.

D. Ajacis. Linn. Sp. Plantarum, I., p. 748. DC. Syst. Nat., I., p. 341. Wight & Arnott, Prodromus Fl. Pen. Ind. Orient., I., p. 4. Lawson, Ranunc. Canad., p. 49. Provancher, Fl. Canadienne, p. 16. Ledebour, Fl. Ross., I., p. 58.

Hyacinthus. Theocr., Idyl., 19, and Ovid, Metam. (DC.)

Between Wild Rice River and Red Lake River, September, 1860.—*Dr. Schultz*.

In the species *Plantarum*, Linnæus gives a blank habitat for this plant, as if it were known, in his day, not as a wild plant at all, but only as a garden flower. The specimens collected by Dr. Schultz may have grown from seeds accidentally dropped by a traveller. It should, however, be looked for, now that the country is settled. Trautvetter, in his Enumeration of the Plants collected by Radde in the Caucasus in 1875, cites a station for this species in Russian Armenia, as if it were there indigenous.

Genus XIII.—ACONITUM, Linnæus.

Bentham and Hooker, Genera Plantarum, I., p. 9.

List of species :—

- | | |
|-------------------------------|-------------------------|
| 1. <i>A. Napellus</i> . | [<i>A. Fischeri</i>]. |
| 2. <i>A. delphinifolium</i> . | |

1.—ACONITUM NAPELLUS, Linnæus,

Tall (2 feet or more), straight, erect, leafy. Leaves very dark dull green, furrowed on the upper surface, palmately lobed, the lobes pinnatifid. Flowers very numerous, closely set, on short pedicels, forming long, slender, simple racemes. Galea nearly hemispherical, sepals dark blue, dull or lurid before expansion. Whole plant more or less pubescent. Readily distinguished by its very long racemes, which are not at all corymbose. Rootstock fusiform, black, yields the very poisonous alkaloid Aconitine. Several other European and Asiatic species are cultivated in gardens, with which this is apt to be confounded. *Monkshood*. *Wolf's Bane*.

Aconitum Napellus. Linn. Species Plantarum, p. 751 (excl. syn. Gronov. Virg., 165). Kœlle, Specileg. Aconit., p. 14. cum ic. (1788). Willdenow, Sp. Pl., II., p. 1235. Smith, English Flora, III., p. 81. Aiton f., Hort. Kew., III., p. 323. Hooker, Brit. Fl. Babington, Manual. Wood, Cl. Bk. & Fl., p. 211. Hook. f., Student's Flora, p. 12.

A. vulgare. DC. Syst. Nat., I., p. 371.

Found occasionally as a garden outcast, but not inclined to spread in Canada. Near Falls of Montmorenci.—*Mr. Thomas*. Sir Joseph Hooker gives its distribution as Europe, Siberia, West Asia to the Himalaya. Noticed (1811) by Aiton as a native of Germany, France and Switzerland, first cultivated in England in 1596 by Mr. John Gerard. It was first found wild in England, (in Herefordshire), abundantly in 1819 by Rev. E. Whitehead, Oxon. (Eng. Fl.); is now regarded as doubtfully native in Wales, Hereford and Somerset; naturalized elsewhere; a denizen?—*Watson*. Not noticed in the early British Floras. The original *A. Napellus* of Linnæus seems to have included at least two European and one American species.

2.—ACONITUM DELPHINIFOLIUM, Reichenbach.

Plant rather low and spreading, with fine pubescence or glabrous, few- or many-flowered. Leaves round-reniform in outline, palmately lobed, lobes incisely crenate.

Sec. IV., 1884. 11.

Flowers deep blue, in a short, loose, simple raceme, or more usually slightly corymbose below, with long pedicels, (more lax and flaccid than in *A. Napellus*); galea hemispherical or only very slightly conically-narrowed.

Aconitum delphinifolium. Reichenbach, Monogr. Acon., p. 79, t. 9. Lawson, Monogr. Ranun. Canad., p. 49.

A. delphinifolium, *Americanum*. DC. Syst. Nat., I., p. 380.

A. Napellus var. *delphinifolium*. Seringe, Monogr., p. 159. DC. Prod., I., p. 63. Hook., Fl. Bor.-Am. I., p. 26. Torr. & Gr., Fl. N. Am., I., p. 34. Regel, Bot. Ostsibirien, I., p. 110. Rothrock, Fl. Alaska, p. 442. Watson, Bibl. Index, I., p. 1. Macoun, Cat. No. 26.

A. Napellus var. *delphinifolium*, *lusus* β . *paradoxum*. Regel, Bot. Ostsib., I., p. 111, t. 3, fig. 55.

A. paradoxum. Reich., Monogr., t. 10, fig. 3-5.

A. delphinifolium, β . *paradoxum*. Reich. Ill. Gen. Acon., t. 42.

A. delph. var. α . and γ . Ledebour, Fl. Rossica, p. 70.

A. Napellus. Hook. & Thomson, Flora Indica, I., p. 57. Macoun, 1st Cat., No. 70.

Sledge Island (misspelt in DC. Syst.) on the north-west coast of North America.—*David Nelson, Menzies*. About Behring Strait, as far north as lat. $66^{\circ} 13'$.—*Chamisso*. Cape Mulgrave and Kotzebue Sound.—*Capt. Beechey's Collection*. Moist mountain prairies in the Rocky Mountains, bet. lat. 52° and 56° .—*Drummond, Hooker*. The Yukon country, adjoining the Russian Territory.—*McTavish*. Misinchinca River, near Pine River Pass, Rocky Mountains, July 23d, 1879, in fl.—*Dr. G. M. Dawson*, in Herb. Canad. Survey. Woods between McLeod Lake and Stuart Lake, B.C.—*Macoun*. Between Point Barrow and Mackenzie River.—*Rothrock*. Chamisso Island; Sitka; Kamtschatka; near Kadjak.—*Regel*. Two forms of *delphinifolium*, not observed in America, have been described by Reichenbach as species: *semigalcatum*, which, occurs in Kamtschatka, Unalaschka, Bays of Eschscholtz and Laurent; and *Chamissonianum* in Unalaschka.

[*ACONITUM FISCHERI*, *Reichenbach*, has not yet been found in British America; but occurs in Alaska and in Washington Territory, where it was first found by Douglas on the Wallawallah River, a branch of the Columbia; it ranges to Kamtschatka, and one form (β . *arcuatum*) occurs in Mandschuria; in America it reaches south to California, rising to 8000 feet on the Sierra Nevada. Smooth or slightly pubescent; leaves palmately cleft, the 5 (or 3) segments being rather widely cuneate, and incisely toothed, the lobes rhombic-ovate, acutely pointed. Flowers in a somewhat paniced raceme. Galea more or less conical, its margin arched from insertion to point. This is the *A. nasutum*, of Hook., Fl. Bor.-Am. *A. Fischeri*, var. α . *typicum*, Regel, Bot. Ostsibirien, p. 98.]

Genus XIV.—*ACTÆA*, *Linnaeus*.

Bentham and Hooker, Genera Plantarum, I., p. 9.

List of species :—

1. *A. alba*.
2. *A. rubra*.

3. *A. rubra*, var. *arguta*.

1.—*ACTÆA ALBA*, Bigelow.

Stem scaly at the base, bearing about two ternately decomposed leaves, the leaflets ovate-acuminate, serrated,—and terminating in an erect raceme of small white flowers. Raceme elongated in flower, oblong, pedicels very thick and rigid in flower, and increasing as the fruit ripens, becoming as large as the peduncle or axis, and thickened at the apex so as to embrace the base of the fruit; berries large, milk white, somewhat elongated or egg shaped. Growing side by side with *A. rubra*, this plant, which is much larger in all its parts, flowers and ripens its fruit about a month later in the season, so that it is difficult to compare the two in the fresh state.

Actæa alba. Bigelow, in Eaton's Manual, ed. 4, p. 187. Fl. Bost., ed. 2, p. 211. Hook., Fl. Bor.-Am., I., p. 27. Torr. & Gr., Fl. N. A., I., p. 35. Torrey, Fl. N. York, I., p. 22. Chapman, Fl. S. U. S., p. 11. Gray, Manual, ed. 5, p. 47. Lawson, Ranunc. Canad., p. 51. Watson, Bibl. Index, I., p. 2. Macoun, Cat., No. 73.

Actæa spicata, var. *alba*. Linn. Sp. Plant., p. 722. Ait. f., Hort. Kew., III., p. 286. Persoon, Synops., II., p. 61. Wood, Cl. Bk. & Fl., p. 212. Gray, Manual, ed. 2, p. 14.

A. Americana, var. *α. baccis niveis*. Pursh, Fl. Am., II., p. 366, (1814).

A. brachypetala, var. *α. alba*. DC. Syst. Nat., I., p. 385, (1818).

A. pachypoda. Elliott, Carolina, II., p. 15, (1821).

Aconitum baccis niveis. Cornuti Canad., t. 77, (1635).

Canada.—*Michaux*. About Lake Huron.—*Dr. Todd*. St. Helen's Island; Kingston; Thorold; Navy Island and Malden.—*Dr. P. W. MacLagan*. Prescott.—*B. Billings jun.*, in Herb. Bot. Soc. Ca. Near Toronto, June 2nd, 1862; Blomidon, Nova Scotia, 1882.—*Lawson*. Windsor, N.S.—*Dr. How*. Camden, Co. Addington, Ont.—*Dr. Dupuis*. Belleville, Ont., frequent in rich woods; throughout Quebec and Ontario, and through the wooded country to the Coast Range in British Columbia.—*Macoun*. Does not pass north of 53° or 54°—*Barnston*. Hamilton, Ont.—*Judge Logie*. Anticosti.—*Verrill*. New Brunswick.—*Fowler*. Smith's Falls, Ont., 1843.—*Dr. P. W. MacLagan*, in Trans. Bot. Soc. Edin. Belleville, Ont., 16th May, 1867.—*Macoun*, in Herb. Can. Survey.

2.—*ACTÆA RUBRA*, Willdenow.

Resembling the preceding in habit. Raceme compact, shortly oblong or hemispherical in flower, the peduncle or general axis elongating slightly in fruit; pedicels very slender and dark in colour; berries more or less drooping on their weak stalks, roundish-oblong, somewhat oblique, with a longitudinal groove on one side, skin deep red, pulp white, seeds dark. Plants of this species, from Blomidon, Nova Scotia, and Ottawa, Ont., agree in their season of ripening, which is much earlier than that of *A. alba*. The berries are occasionally very small, without seeds. The slender pedicels appear to be a constant character.

Actæa rubra. Willdenow, Enumer. Berolin., p. 560, (1809). Bigelow, Fl. Bost. ed. 2, p. 211. Hook., Fl. Bor.-Am., I., p. 27. Back's Expedition, p. 523. Torr. & Gr., Fl. N. A., I., p. 35. Torrey, Fl. N. Y., I., p. 21. Gray, Gen. Ill., I., p. 50, t. 19. Pl. Fendlerianæ, p. 5. Lawson, Ranunc. Canad., p. 50.

A. spicata, var. *rubra*. Aiton, Hort. Kew. ed. 1, II., p. 221. Willd., Sp. Pl., II., p. 1139. Michaux, Fl., I., p. 308. Wood, Cl. Bk. & Fl., p. 212.

A. Americana, var. *β. baccis rubris*. Pursh, Fl. Am., II., p. 367. (1814.)

A. brachypetala, var. *β. rubra*. DC. Syst. Nat., I., p. 385. (1818). Richardson, in Franklin's Jour., p. 12.

A. longipes. Spach, Hist. Veg., VII., p. 388.

Canada; from Hudson Bay to the Rocky Mountains, as far north as lat. 60° in woods.—Todd, Richardson, Drummond, Hook., Fl., B.-A. Near Odessa, Ont., July 10th, 1861; Portsmouth near Kingston, Ont., June 4th, 1859; Indian Island, Bay of Quinté, June 5th, 1862; Toronto, June 2nd, 1862; Chelsea Mountains near Ottawa, May 24th, 1884; Blomidon and Lueyfield, Nova Scotia.—Lawson. Bass River, Kent, New Brunswick.—Rev. J. Fowler, sp. in fl. Montreal Mountain, May, 1848.—James Adie, sp. in fl. Malden.—Dr. P. W. MacLagan. Newfoundland, Barbe Bay, Aug. 7th, 1861.—J. Richardson, in fl., in Herb. Bot. Soc. Canad. Slave Lake, June 24th; York Factory, in fl., September.—McTavish. Between Wild Rice River and Red Lake River, September, 1860.—Dr. Schultz, sp. No. 114. Belleville, frequent in rich woods; common in rich woods from Nova Scotia and New Brunswick to the Rocky Mountains, and north to lat. 60°,—exclusively a forest plant.—Macoun. Near Emerson, Manitoba.—Burgess. Belleville, 2nd Concession.—Macoun, in Herb. Canad. Survey. Ste. Anne des Montes, P. Quebec, June 17th, 1888.—Porter. Bass River, New Brunswick, first flowering: June 4th, 1867; May 29th, 1868; June 2nd, 1869.—Fowler. Lake Winnipeg.—R. King, Back's Expedition, 1833-4. Newfoundland, 1866-8.—H. Reeks, Lond. Jour. Bot., IX., p. 16.

3.—*ACTÆA RUBRA*, var. *ARGUTA*.

Plant much larger than the typical form of *rubra*. Leaflets elliptical, acuminate, deeply doubly incised. Racemes oblong and loose in flower; pedicels filiform, scarcely thickening in fruit. Berries small, dark red. In Prof. Macoun's specimens from Fraser River the leaves are much smaller than in those of Dr. Dawson from Quesnelle and the Rocky Mountains; the raceme is elongated in fruit.

Actæa arguta. Nuttall, in Torr. & Gr., Fl. N. Am., I., p. 35.

A. spicata var. *arguta*. Torrey, Pacif. Ry. Rep., IV., p. 63. Brewer & Watson, Bot. Calif., p. 12.

Extends from Washington Territory to Alaska. Fraser River, B. C.—Macoun, in Herb. Canad. Survey. Mitchell's Creek, Rocky Mountains, July 11th, 1888; Quesnelle, B. C., May 27th, 1876.—Dr. G. M. Dawson, in Herb. Canad. Survey.

Whilst our three British American forms of *Actæa* closely resemble each other in their habit or mode of growth, foliage, flowers and fruit, and each indicates some tendency to variation under varying conditions of soil and climate, and probably in some cases as the result of crossing, yet their distinctive characters are too well marked to admit of their being lumped into one species, or merged in the European *A. spicata*,—whose small, neat, narrow leaflets, small, compact corymbs of flowers, extremely short pedicels, the upper flowers being almost sessile, and black berries, seem to separate it clearly from all our forms.

Genus XV.—CIMICIFUGA, *Linneus*.Bentham and Hooker, *Genera Plantarum*, I, p. 9.1.—CIMICIFUGA RACEMOSA, *Nuttall*.

Rootstock thick and knotted. Leaves triternate, leaflets ovate-oblong, incisely serrate. Racemes branching, very long and wand-like, 6 to 12 inches when in flower, elongating to from 1 to 3 feet in fruit. Sepals white, or greenish-white, caducous. Fruit, monogynous (sometimes digynous, DC.). Petals 4 to 6, small. Stamens numerous (as in *Actæa*) with slender white filaments, "about 100 to each flower, giving the raceme the appearance of a long and slender plume," (Wood.) Flowers fetid. Carpels globose-ovate. Seeds 7 or 8, compressed. Flowers in July. *Black Snake Root. Black Cohosh. Bugbane.*

Cimicifuga racemosa. Nuttall, *Gen. Pl.*, II., p. 15. (1818). Barton, *Fl. Philad.*, II., p. 12. (1819). Elliott, *Bot. S. Carol.*, II., p. 16. (1821). Torr. & Gr., *Fl. N. Am.*, I., p. 36. Torr., *Fl. N. Y.*, I., p. 22, t. 4. Gray, *Gen. III.*, I., p. 51, t. 20. *Manual*, ed. 2, p. 15; ed. 5, p. 48. Chapman, *Fl. S. U. S.*, p. 11. Lawson, *Ranunc.*, *Canad.*, p. 50. Watson, *Bibl. Index*, I., p. 9. Macoun, *Cat.*, No. 75. Wood, *Cl. Bk. & Fl.*, p. 211. Bentley, *Pharmaceutical Journal*, series 2, II., p. 460.

C. serpentaria. Pursh, *Fl. N. Am.*, II., p. 372.

Actæa racemosa. Linn. *Sp. Pl.*, p. 722. *Amœn. Acad.*, VII., p. 193, t. 4. Aiton f., *Hort. Kew*, ed. 2, III., p. 286. Willd. *Sp. Pl.*, II., p. 1139. Michaux, *Fl.*, I., p. 308. DC. *Syst. Nat.*, I., p. 384. *Prod.*, I., p. 64. Hook., *Fl. Bor.-Am.*, I., p. 27.

A. monogyna. Walter, *Fl. Carolina*, p. 151.

A. orthostachya and *gyrostachya*. Wendroth, *Index Sem. Hort. Marburg*, 1840.

Macrotyis actæoides. Rafinesque, *N. Y. Med. Rep.*, V., p. 354. Desv. *Jour. Bot.*, II., p. 170.

M. serpentaria. Eaton, *Manual*, ed. 4, p. 356.

M. racemosa. Eaton, *Man.*, ed. 5, p. 288.

Botrophis Serpentaria. Rafin., *Med. Fl.*, I., p. 85, f. 16.

B. actæoides. Fischer & Meyer, *Index Sem. Petrop.*, 1835.

Actæa racemis longissimis. Gronovius, *Flora Virginica*, p. 59. (1743).

For an exhaustive account of the medicinal properties of this plant, see Prof. Bentley's paper in the London "Pharmaceutical Journal and Transactions," second series, Vol. II., p. 460, (March, 1861), from which it appears that the root had long been a popular remedy in consumptive and bronchial affections in several of the western States of the American Union, and was first brought into regular practice by Dr. Garden, of Virginia, in 1823, as a medicine of great value in tubercular consumption. The rhizome is the part used. A resinoid extract is procured by precipitation from the concentrated tincture of *cimicifuga* by water; this has been termed *Cimicifugin* or *Macroton* (*Pharm. Jour.*, XVI., p. 273), but it does not possess all the active constituents of the root, which are best taken up by water and (especially) alcohol. Hence water and alcohol are commonly used in the medicinal preparations of *cimicifuga*. A *fluid extract* and a *dry extract* have been prepared by Prof. Procter, (*Amer. Jour. Pharm.*, XXVI., p. 107).

Habitat in Florida, Virginia, Canada.—*Linneus*.

Canada.—*Pursh*. Cayuga, Grand River, Ontario.—*Dr. P. W. MacLagan*, in *Herb. Edin.* Norfolk County, Ontario.—*Dr. Nichol*, according to Macoun's Catalogue. Canada to

Georgia and the Western States.—*Torrey & Gray*. Obviously very rare in Canada; the only Canadian specimens I have seen are those of Dr. MacLagan from Cayuga. Said by Wood to grow in upland woods; by Gray, in rich woods. Maine and Vermont to Wisconsin and southward.—*Gray, Man.*

Cultivated in England in 1782 by James Sherard, M.D.

Genus XVI.—PÆONIA, *Linnaeus*.

Bentham and Hooker, *Genera Plantarum*, I., p. 10.

One species.

1.—PÆONIA BROWNII, *Douglas*.

Herbaceous. Leaves thick, biternate, the leaflets ternately and pinnatifidly lobed; glabrous, glaucous beneath. Petals scarcely longer than the sepals, leathery, dark red. Follicles three to five, smooth.

Pæonia Brownii. Douglas, in Hook., *Fl. Bor.-Am.*, 2., p. 27. Torr. & Gray, *Fl.*, I., p. 41. Bot. Reg., ser. 2, t. 30. Brewer & Watson, *Bot. Calif.*, I., p. 13. Wats., *Bibl. Index*, I., p. 15. Macoun, *Cat.*, No. 77.

P. Californica. Nuttall, in Torr. & Gr., *Fl. N. A.*, I., p. 41.

Near the confines of perpetual snow, on the sub-alpine range of Mount Hood, North-West America, 1826, fl. June, July.—*D. Douglas*. Hook., *Fl. Bor.-Am.* Mount Hood is laid down in Hooker's map as in lat. 45° N.; long. 121° W.; and at a distance of about 150 miles from the Pacific Coast. East of the Blue Mountains of Oregon, not in sub-alpine situations.—*Nuttall*, in Torr. & Gray, *Fl. N. A.* San Bernardino to Vancouver and western Utah, but rare east of the Sierra Nevada; this plant endures a great range of station and climate, from wet to very dry soils, and from the hot plains of Southern California to near the confines of perpetual snow on the mountains.—*Brewer & Watson*.

This species is not known in cultivation.

INDEX

TO

REVISION OF CANADIAN RANUNCULACEÆ.

Note.—The specific and varietal names under which the plants are described in the paper are printed in the Index in SMALL CAPITALS, the synonyms and historical names in lower case letters.

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